P. L. BETZ

Vol. 53
1934

Electrical Engineering

REFERENCE INDEX

Volume 53 1934

Published by the American
Institute of Electrical Engineers
33 West 39th Street, New York, N. Y.

Annual Reference Index

This multientry annual reference index covers comprehensively the 12 issues of ELECTRICAL ENGINEERING for 1934. Particular attention has been directed toward effective correlation between references to technical papers and to associated discussion, if any; a reference to any one of the several entries for each technical paper will lead directly to such discussions concerning that paper as may have been published during 1934. Discussions of papers published during the latter months of any calendar year will be found to be published in practically all cases during the early months of the succeeding year.

For convenience in reference use this index is subdivided into the following 5 general divisions:

1. Technical subjects, embracing all non-departmental material published during 1934.

2. Authors, contributors, and discussors, including a listing of all signed articles.

3. News items pertaining to Institute activities.

4. General, non-Institute, news items.

5. Biographical items, containing the names and page references for all persons whose activities were recorded either in the "personal" or "obituary" departments; including also all other entries of a personal rather than of a general news nature.

1934 Index—A.I.E.E. Transactions

Division I—
Technical Subject Index

A 7,000-Ampere Station Bus. Unland, Morton, Bacon..... 994
Disc., 1646; clos..... 1650
A-C Potentiometer, An. Burgwin..... 108
Disc..... 624
Actions on Electric and Magnetic Units. Kennelly..... 402
Aerial Communication Cable, Iron Armored. Gilkeson, Hanks..... 890
Disc., 1324; clos..... 1325
(Air Conditioning) Steam Ejector for Car Conditioning. Ashley..... 406
Air, Impulse and 60-Cycle Strength of. Bellaschi, Teague..... 1638
Alternating Current Versus Direct Current. Stillwell..... 708
Alternators for Signaling Purposes, Inductor. Merrill..... 78
Amplification, Limits to. Johnson, Llewellyn..... 1449
Amplifiers, Auditory Perspective. Scriven..... 25
Disc..... 461
Amplifiers, Stabilized Feed-Back. Black..... 114
Disc., 461, 590; clos..... 1311
Analytical Representation of a Magnetising Curve. Van Niekerk..... 1186
Anemometer, A Glow Discharge. Lindvall..... 1068
Arc at Low Pressures, Reignition of an. Mackeown, Bowden, Cobine..... 1081
Arc Electric Furnaces, Rocking Indirect. Crosby..... 132
Disc..... 452, 454, 591
Arc Furnace, The 3-Phase Electric. Arnold (Dec. 1933, p. 938)
Disc., 492, 593; clos..... 594
Arc, High Velocity Streams in the Vacuum. Easton, Lucas, Creedy..... 1454
Arcover in Air, Insulator. Maxstadt..... 1062
Armature Windings, Insulation Resistance of. Wiesseman..... 1010
Disc., 1407; clos..... 1524
Armored Aerial Communication Cable, Iron. Gilkeson, Hanks..... 890
Disc., 1324; clos..... 1325
Atmospheric Conditions, Corona Loss Vs. Hegy, Dunlap..... 272
Atoms and Molecules, Electronic Theory of Valence, Structure of. Huggins. 851
Attenuation and Distortion of Waves. Bewley (Dec. 1933, p. 876)
Disc., 471, 595; clos..... 597
Auditory Perspective—(See Communication)
Automatic Reclosing of Oil Circuit Breakers. Anderson..... 48
Disc., 466, 614; clos..... 615
(Automatic Stations) A Compensated Automatic Synchroniser. Seeley... 960
Clos..... 1528
(Automatic Stations) Electronic Regulator for A-C Generators. Gulliksen.. 877
Disc., 1530; clos..... 1531
(Automatic Stations) Load Totalising in the New York Area. Zogbaum..... 886
Disc., 1529; clos..... 1529
(Automatic Stations) Some New Developments in Supervisory Control. Reagan..... 949

B

Better Instrument Springs. Carson..... 283
Board of Directors, Report of the..... 1095
(Boulder Dam) Corona Losses From Conductors of 1.4-Inch Diameter. Carroll, Cozzens, Blakeslee (Dec. 1933, p. 854)
Disc., 470, 600; clos..... 1310
(Boulder Dam) Power Limits of 220-Kv Transmission Lines. Kroneberg, Macferran (Nov. 1933, p. 758)
Disc., 473; 601; clos..... 601
Bridge for Field Tests, Portable Schering. Hill, Watts, Burr..... 176
Disc., 478, 618; clos..... 1311
(Bklyn. (N. Y.) Ed. Co.) Switching at the Hudson Avenue Station. Gilt.. (Dec. 1933, p. 868)
Disc., 456; clos..... 585
Budget, The Story of the Institute. Meyer..... 375
(Buffalo, Niagara & Eastern Pwr. Co.) Fundamentals of Design of Electric Energy Delivery Systems. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
Bus, A 7,000-Ampere Station. Unland, Morton, Bacon..... 994
Disc., 1646; clos..... 1650

C

Cable, Iron Armored Aerial Communication. Gilkeson, Hanks..... 890
Disc., 1324; clos..... 1325
Cable, The New Italy-Sardinia..... 528
Cables, Iron Shielding for Telephone. Moore..... 274
Disc., 1323; clos..... 1324
Cables, Resistance and Reactance of 3-Conductor. Salter, Shanklin, Wiseman..... 1581
Calculus, Operational. Gardner..... 1339
Calibration of the Sphere Gap. Meador. 942
Disc., 1652; clos..... 1659
Carbon and Graphite, Electrodes—Vosburgh (Dec. 1933, p. 844)
Disc..... 452
Carbon Arc, Characteristics and Uses of the. Kalb..... 1173
Carrier, Recent Developments in Power Line. Johnson..... 542
Disc..... 1325
Cast Iron and Its Production. Healey... 120
Disc..... 452, 455, 590
Cathode Ray Tubes and Their Application. Stinchfield..... 1608
Cellulose Paper, Dielectric Properties of. Parts I and II. Whitehead, Greenfield..... 1389, 1498
Century of Progress in 50 Years, A. Rice..... 689
"Century of Progress," Lighting. Ryan. 731
Characteristics and Uses of the Carbon Arc. Kalb..... 1173
Characteristics of a Group of Engineers. Spooner..... 1571
Circuit Breaker, A New High Speed Air. Keep..... 322
Circuit Breaker, The Expulsion Oil. Schwager..... 1108
Circuit Breakers, Automatic Reclosing of Oil. Anderson..... 48
Disc., 466, 614; clos..... 615
Circuit Formulas, Impulse Generator. Thomason..... 169
Disc..... 622
Circuits in Stability Studies, Equivalent. Dahl, Fitzgerald..... 1272
Circuits, Resonant Lines in Radio. Terman..... 1046
Circuits, Two Applications of Nonlinear. Austin, Cooper..... 293
Coaxial Communication Transmission Lines. Schelkunoff..... 1592
Coaxial Lines, Wide Band Transmission Over. Espenschied, Strieby..... 1371
(Com. rept.) A Survey of Hydroelectric Developments..... 988, 1086
Disc., 1651; clos..... 1652
(Com. rept.) Flashover Voltages of Insulators and Gaps..... 882
Disc..... 1531, 1537
(Com. rept.) Lightning Performance of 220-Kv Lines..... 1143
(Communication) A New Type of Warble Tone Generator. Bliss..... 547
(Communication) A 100-Kw Vacuum Tube..... 1266
(Communication) A Thermionic-Tube Measuring Instrument. Wagner... 1621
(Communication) Auditory Perspective—Amplifiers. Scriven..... 25
Disc..... 461
(Communication) Auditory Perspective—Basic Requirements. Fletcher..... 9
Disc..... 461
(Communication) Auditory Perspective—Loud Speakers and Microphones. Wente, Thuras..... 17
Disc..... 461
(Communication) Auditory Perspective—Physical Factors. Steinberg, Snow..... 12
Disc..... 461
(Communication) Auditory Perspective—System Adaptation. Bedell, Kerney..... 216
Disc..... 461
(Communication) Auditory Perspective—Transmission Lines. Affel, Chesnut, Mills..... 28
Disc..... 461
Communication Cable, Iron Armored Aerial. Gilkeson, Hanks..... 890
Disc., 1324; clos..... 1325
(Communication) Cathode Ray Tubes and Their Application. Stinchfield.. 1608
(Communication) Effects of Rectifiers on System Wave Shape. Blye, Kent..... 54
Disc., 483, 608; clos..... 609
(Communication) Inductor Alternators for Signaling Purposes. Merrill.... 78
(Communication) Iron Shielding for Telephone Cables. Moore..... 274

Page Allocation by Issues

January	1- 236
February	237- 372
March	373- 508
April	509- 640
May	641- 848
June	849-1036
July	1037-1140
August	1141-1244
September	1245-1336
October	1337-1432
November	1433-1560
December	1561-1688

Disc., 1323; clos..... 1324
(Communication) Joint Use of Poles With 6,900-Volt Lines. Bullard, Keyes (Dec. 1933, p. 890)
Disc., 489, 491; clos..... 610
(Communication) Limits to Amplification. Johnson, Llewellyn..... 1449
(Communication) Line Filter for Program System. Clement..... 562
Communication—Past and Present. Gherardi..... 745
(Communication) Ratings of Industrial Electronic Tubes. Pike, Ulrey..... 1577
(Communication) Recent Developments in Power Line Carrier. Johnson.... 542
Disc..... 1325
(Communication) Resonant Lines in Radio Circuits. Terman..... 1046
(Communication) Stabilized Feed-Back Amplifiers. Black..... 114
Disc..... 461, 590, 1311
(Communication) Telegraph Men Founders of the A.I.E.E. McNicol. 675
(Communication) Television by Electronic Methods. Brolly..... 1153
(Communication) The "Compandor"—An Aid Against Radio Static. Mathes, Wright..... 860
(Communication) The "Ignitron" Inverter. Wagner, Ludwig..... 1384
(Communication) The New Italy-Sardinia Cable..... 528
(Communication) The "Thyratron" Motor. Alexanderson, Mittag..... 1517
(Communication) Theory of Multielectrode Tubes. Pidgeon..... 1485
Communication Transmission Lines, Coaxial. Schelkunoff..... 1592
(Communication) Vacuum Tubes as High Frequency Oscillators. Kelly, Samuel..... 1504
(Communication) Wide-Band Open-Wire Program System. Hamilton..... 550
(Communication) Wide Band Transmission Over Coaxial Lines. Espenschied, Strieby..... 1371
"Compandor"—An Aid Against Radio Static, The. Mathes, Wright..... 860
Compensated Automatic Synchronizer, A. Seeley..... 960
Clos..... 1528
Composite Systems, Steady State Stability of. Crary (Nov. 1933, p. 787)
Disc., 475, 477; clos..... 594
Conduction, The Present Theory of Electric. Herzfeld..... 523
Conductor Vibration, Field Tests on. Wright, Mini..... 1123
Conductors of 1.4-Inch Diameter, Corona Losses From. Carroll, Cozzens, Blakeslee (Dec. 1933, p. 854)
Disc., 470, 600; clos..... 1310
Conductors, Vibration Analysis—Transmission Line. Buchanan..... 1478
Connors Creek Plant, Switching at the. Fugill..... 162
Disc., 456; clos..... 586
(Control) Induction Motors as Selsyn Drives. Nowacki (Dec. 1933, p. 848)
Control of Distance Relay Potential Connections. Warrington..... 206
Disc., 465; clos..... 617
Control of Transients in Welding Generators. Hornby..... 1598
Control of Voltage and Power Factor. Simultaneous. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
Control, Some New Developments in Supervisory. Reagan..... 949
Control, Voltage Regulation and Load. Forbes, Searing..... 903
Disc., 1525; clos..... 1528
Corona Loss Vs. Atmospheric Conditions. Hegy, Dunlap..... 272
Corona Losses From Conductors of 1.4-Inch Diameter. Carroll, Cozzens, Blakeslee (Dec. 1933, p. 854)
Disc., 470, 600; clos..... 1310
Counterpoise Tests at Trafford. Fortescue, Fielder..... 1116
Counterpoise, Theory and Tests of the. Bewley..... 1163
Counterpoises for Transmission Lines. Fortescue (Dec. 1933, p. 908)
Disc., 467, 473, 598; clos..... 599
Cross Current of a 5-Arm Network. Seletzky, Anderson..... 1004
Disc., 1660; clos..... 1660
Cross Potential of a 4-Arm Network. Seletzky (Dec. 1933, p. 861)
Disc..... 478

D

Decrement Curves for Power Systems. Dalziel..... 331
Delivery Systems, Fundamentals of Design of Electric Energy. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
Demand Meter, A New. Smith..... 94
Disc., 625; clos..... 626
Design Features of the Port Washington Power Plant. Post..... 264
Design of Electric Energy Delivery Systems, Fundamentals of. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
Developments in Electric Power Transmission. Ryan..... 712
Developments in Power Line Carrier, Recent. Johnson..... 542
Disc..... 1325
Developments, Significant Electrical... 840
Dielectric Properties of Cellulose Paper. Parts I and II. Whitehead, Greenfield..... 1389, 1498
(Dielectrics) Impulse and 60-Cycle Strength of Air. Bellaschi, Teague.. 1638
Dielectrics, Measurement of Wetting of. McLean, Kohman..... 255
Diesel Electric Rail Cars and Locomotives. Storer..... 1461
Direct Current, Alternating Current Versus. Stillwell..... 708
Discharge Anemometer, A Glow. Lindvall..... 1068
Discharges, Electric Discharges in Gases — III, Self-Maintained. Slepian, Mason..... 511
Distance Relay Action During Oscillations. Bancker, Hunter..... 1073
Disc., 1320; clos..... 1322
Distortion of Waves, Attenuation and. Bewley (Dec. 1933, p. 876)
Disc., 471, 595; clos..... 597
(Distribution) A New Laboratory for High Voltage Testing. Lusignan, Rorden..... 1255
(Distribution) A New Porcelain Post Insulator. Lapp..... 922
Disc., 1531, 1540; clos..... 1541
Distribution, An Economic Study of Suburban. Sweetnam, Corney..... 97
(Distribution) Attenuation and Distortion of Waves. Bewley (Dec. 1933, p. 876)
Disc., 471, 595; clos..... 597
(Distribution) Corona Losses From Conductors of 1.4-Inch Diameter. Carroll, Cozzens, Blakeslee (Dec. 1933, p. 854)
Disc., 470, 600; clos..... 1310
(Distribution) Counterpoise Tests at Trafford. Fortescue, Fielder..... 1116
(Distribution) Decrement Curves for Power Systems. Dalziel..... 331
(Distribution) Dielectric Properties of Cellulose Paper. Parts I and II. Whitehead, Greenfield..... 1389, 1498
(Distribution) Distance Relay Action During Oscillations. Bancker, Hunter..... 1073
Disc., 1320; clos..... 1322
(Distribution) Effects of Rectifiers on System Wave Shape. Blye, Kent... 54
Disc., 483, 608; clos..... 609
(Distribution) Field Tests on Conductor Vibration. Wright, Mini..... 1123
(Distribution) Flashover Voltages of Insulators and Gaps. (Com. rept.). 882
Disc..... 1531, 1537
(Distribution) Fundamentals of Design of Electric Energy Delivery Systems. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
(Distribution) High Voltage Insulators. Smith, Lusignan..... 969
Disc., 1531, 1536; clos..... 1536
(Distribution) Insulator Arcover in Air. Maxstadt..... 1062
(Distribution) Insulator Surface and Radio Effects. Hillebrand, Miller.. 1213
(Distribution) Joint Use of Poles With 6,900-Volt Lines. Bullard, Keyes (Dec. 1933, p. 890)
Disc., 489, 491; clos..... 610
(Distribution) Lightning Investigation on a 220-Kv System. Bell..... 1188
(Distribution) Lightning Investigation on Transmission Lines—IV. Lewis, Foust..... 1180
(Distribution) Lightning Measured on 4-Kv Overhead Circuits. Halperin, McEachron..... 33
Disc., 465, 616; clos..... 617
(Distribution) Lightning Performance of 132-Kv Lines. Sporn, Gross..... 1195
(Distribution) Lightning Performance of 220-Kv Lines. (Com. rept.)..... 1443
(Distribution) Loading a Bank of Dissimilar Transformers. Bock..... 1597
(Distribution) Measurement of Noise From Power Transformers. Fugill..... 1603
(Distribution) Multiple Lightning Strokes. McEachron..... 1633
(Distribution) Overvoltages on Transmission Lines. Gilkeson, Jeanne.... 1301
Distribution, Radial Versus Primary Network. Wulfing..... 38
Disc..... 489, 492, 610
(Distribution) Radio Influence Insulator Characteristics. Gilchrest..... 899
Disc., 1531, 1539; clos..... 1539
Distribution Ratio Method, Locating Grounds by. Dunkle, DeShazo.. 258
(Distribution) Recent Developments in Suspension Insulators. Barrow.... 867
Disc., 1531, 1539; clos..... 1540
(Distribution) Resistance and Reactance of 3-Conductor Cables. Salter, Shanklin, Wiseman..... 1581
(Distribution) Selection and Performance of Suspension Insulators. Sporn, Peterson, Mulford..... 936
Disc., 1531, 1538; clos..... 1538
(Distribution) Some Recent Relay Developments. Hunt, Kroneberg..... 530
(Distribution) The Insulator String. Sorensen..... 1221
(Distribution) The Suspension Insulator. Hawley..... 895
Disc., 1531, 1536; clos..... 1536
(Distribution) Theory and Tests of the Counterpoise. Bewley..... 1163
(Distribution) Theory of Primary Networks. Parts I and II. Starr.. 310, 426
Disc..... 1315
Distribution) Voltage Regulation and Load Control. Forbes, Searing..... 903
Disc., 1525; clos..... 1528

E

Economic Study of Suburban Distribution, An. Sweetnam, Corney..... 97
Disc..... 489, 610
(E.C.P.D.) Engineers of the Next Generation. Hirshfeld..... 857
Disc., 1413; clos..... 1416
(Education) Characteristics of a Group of Engineers. Spooner..... 1571
(Education) Electric Discharges in Gases, Ionization and Excitation. Tonks.. 239
(Education) Electric Discharges in Gases—II, Ions in Dense Gases. Darrow..... 388

(Education) Electric Discharges in Gases—III, Self-Maintained Discharges. Slepian, Mason..... 511
(Education) Electron Emission. Dushman..... 1054
(Education) Encouraging Initiative in the Engineering Student. Dawes... 910
Disc., 1413, 1416; clos..... 1417
(Education) Engineers of the Next Generation. Hirshfeld..... 857
Disc., 1413; clos..... 1416
(Education) Fundamental Electrical Properties of Mercury Vapor and Monatomic Gases. Hull..... 1435
(Education) Fundamental Laws of Photo-Electricity. Hughes..... 1149
(Education) Fundamental Properties of the Electron. Waterman..... 3
Education, Industry Demands and Engineering. Morrow..... 518
Disc., 1413, 1418; clos..... 1422
Education Is Meeting the Challenge, Engineering. Bibber..... 1356
(Education) Mapping of Fields. Weber..... 1563
(Education) On the Schooling of Engineers. Dow..... 1589
(Education) Operational Calculus. Gardner..... 1339
(Education) Recent Theories of Ferromagnetism. Bitter..... 1246
(Education) Structure of Atoms and Molecules, Electronic Theory of Valence. Huggins..... 851
Education, The Evolution of Electrical Engineering. Jackson..... 770
(Education) The Pitt-Westinghouse Graduate Program. Dyche, Hellmund..... 103
Disc., 446, 587; clos..... 588
Effect of Oil Pressure on Insulation Strength. Scott..... 308
Effect of Overloads on Transformer Life. Nichols..... 1616
Effects of Rectifiers on System Wave Shape. Blye, Kent..... 54
Disc., 483, 608; clos..... 609
Efficiency Tests of Induction Machines. Leader, Phillips..... 1628
Ejector System for Car Conditioning, Steam. Ashley..... 406
Electric and Magnetic Units, Actions on. Kennelly..... 402
Electric Conduction, The Present Theory of. Hersfeld..... 523
Electric Discharges in Gases, Ionization and Excitation. Tonks..... 239
Electric Discharges in Gases—II, Ions in Dense Gases. Darrow..... 388
Electric Discharges in Gases—III, Self-Maintained Discharges. Slepian, Mason..... 511
Electric Energy Delivery Systems, Fundamentals of Design of. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
Electric Furnaces, Rocking Indirect Arc. Crosby..... 132
Disc..... 452, 454, 591
Electric Furnaces, Transformers for. Stephens, Schell (Dec. 1933, p. 822)
Disc..... 452, 454
Electric Power Switching. Lovell..... 147
Disc..... 456
(Electric Welding) A High Power Welding Rectifier. Silverman, Cox..... 1380
(Electric Welding) A New Timer for Resistance Welding. Stoddard..... 1366
(Electric Welding) High Velocity Streams in the Vacuum Arc. Easton, Lucas, Creedy..... 1454
(Electric Welding) Machine Characteristics for Steady Welding. Creedy, Kogge, Danello..... 1268
(Electric Welding) Transient Voltages in Welding Generators. Miller..... 1296
Electrical Equipment for Induction Furnaces. Levy..... 43
Disc..... 452
Electrical Figures on Plates in Air. Pleasants..... 300
Electrical Industry, Some Contributions to. Chesney..... 726
(Electrical Machinery) A Graphical Solution of Steady State Stability. Dwight..... 566
Clos..... 1316
(Electrical Machinery) An Experimental Ignitron Rectifier. Ludwig, Maxfield, Toepfer..... 75
Disc., 488, 602; clos..... 602
(Electrical Machinery) Effect of Overloads on Transformer Life. Nichols. 1616
(Electrical Machinery) Effects of Rectifiers on System Wave Shape. Blye, Kent..... 54
Disc., 483, 608; clos..... 609
(Electrical Machinery) Efficiency Tests of Induction Machines. Leader, Phillips..... 1628
(Electrical Machinery) Equivalent Reactance of Synchronous Machines. Crary, March, Shildneck..... 124
Disc., 484, 603; clos..... 605
(Electrical Machinery) External Impedance Vs. Short-Circuit Currents. Robertson, Rogers..... 252
(Electrical Machinery) Factors Influencing the Insulation Coördination of Transformers—II. Bellaschi, Vogel..... 870
Disc., 1401; clos..... 1406
(Electrical Machinery) Grid Controlled Rectifiers and Inverters..... 926
Disc., 1400; clos..... 1401
(Electrical Machinery) Heat Flow in Turbine Generator Rotors. Peck... 1359
(Electrical Machinery) Impulse and 60-Cycle Strength of Air. Bellaschi, Teague..... 1638
(Electrical Machinery) Induction Motor Locked Saturation Curves. Norman..... 536
Disc..... 1312
(Electrical Machinery) Induction Motors as Selsyn Drives. Nowacki (Dec. 1933, p. 848)
(Electrical Machinery) Inductor Alternators for Signaling Purposes. Merrill..... 78
(Electrical Machinery) Insulation Resistance of Armature Windings. Wiseman..... 1010
Disc., 1407; clos..... 1524
(Electrical Machinery) Irregular Windings in Wound Rotor Induction Motors. Hellmund, Veinott..... 342
Disc., 1316; clos..... 1317
(Electrical Machinery) Measurement of Noise From Power Transformers. Fugill..... 1603
(Electrical Machinery) Measurement of Noise From Small Motors. Veinott. 1624
(Electrical Machinery) Output Wave Shape of Controlled Rectifiers. Stebbins, Frick..... 1259
(Electrical Machinery) Overloading of Power Transformers. Montsinger, Dann..... 1353
(Electrical Machinery) Power Losses in Induction Machines. Narbutovskih. 1466
(Electrical Machinery) Protecting Machines From Line Surges. Calvert... 139
Disc., 488; clos..... 608
(Electrical Machinery) Reactance and Stray Losses of Power Transformers. Cole..... 338
(Electrical Machinery) Recommended Transformer Standards. Putnam, Clem..... 1594
(Electrical Machinery) Simultaneous Control of Voltage and Power Factor. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
(Electrical Machinery) Split Winding Transformers. Chase, Garin..... 914
Disc., 1411; clos..... 1412
(Electrical Machinery) Stray Load Loss Test on Induction Machines. Morgan, Narbutovskih..... 286
Disc., 1317; clos..... 1318
(Electrical Machinery) Transformer Reactance and Losses With Nonuniform Windings. Stephens..... 346
Disc., 1318; clos..... 1319
(Electrical Machinery) Transients in Magnetic Systems. Wagner..... 418
(Electrical Machinery) Voltage Control of Vapor Rectifiers. Journeaux.... 976
Disc., 1396; clos..... 1399
Electrical Practices in USSR Steel. Fox..... 1251
Electrical Properties of Mercury Vapor and Monatomic Gases, Fundamental. Hull..... 1435
(Electrochemistry) (See Electrometallurgy)
Electrodes—Carbon and Graphite. Vosburgh (Dec. 1933, p. 844)
Disc..... 452
(Electromagnetics) Silicon Steel With A-C and D-C Excitation. Edgar... 318
(Electrometallurgy) Cast Iron and Its Production. Healey..... 120
Disc..... 452, 455, 590
(Electrometallurgy) Electrical Equipment for Induction Furnaces. Levy..... 43
Disc..... 452
(Electrometallurgy) High Frequency Induction Furnaces. Adams, Hodge, MacKusick..... 194
Disc..... 452, 455, 592
(Electrometallurgy) Rocking Indirect Arc Electric Furnaces. Crosby..... 132
Disc..... 452, 454, 591
(Electrometallurgy) The 3-Phase Electric Arc Furnace. Arnold (Dec. 1933, p. 839)
Disc., 492, 593; clos..... 594
(Electrometallurgy) Transformers for Electric Furnaces. Stephens, Schell (Dec. 1933, p. 822)
Disc..... 452, 454
Electron Emission. Dushman..... 1054
Electron, Fundamental Properties of the. Waterman..... 3
Electronic Methods, Television by. Brolly..... 1153
Electronic Regulator for A-C Generators, Gulliksen..... 877
Disc., 1530; clos..... 1531
Electronic Theory of Valence, Structure of Atoms and Molecules. Huggins..... 851
Electronic Tubes, Ratings of Industrial. Pike, Ulrey..... 1577
(Electronics) A Compensated Automatic Synchroniser. Seeley..... 960
Clos..... 1528
(Electronics) A High Power Welding Rectifier. Silverman, Cox..... 1380
(Electronics) A New Timer for Resistance Welding. Stoddard..... 1366
(Electronics) A Telemeter With Pilot Coil Transmitter. Lunas, Bernarde 974
Disc., 1660; clos..... 1661
(Electronics) A Thermionic-Tube Measuring Instrument. Wagner..... 1621
(Electronics) A Vacuum Tube Controlled Rectifier. Foos..... 568
(Electronics) An Experimental Ignitron Rectifier. Ludwig, Maxfield.
Disc., 488, 602; clos..... 602
(Electronics) Cathode Ray Tubes and Their Application. Stinchfield..... 1608
(Electronics) Effects of Rectifiers on System Wave Shape. Blye, Kent... 54
Disc., 483, 608; clos..... 609
(Electronics) Grid Controlled Rectifiers and Inverters. Herskind..... 926
Disc., 1400; clos..... 1401
(Electronics) High Velocity Streams in the Vacuum Arc. Easton, Lucas, Creedy..... 1454
(Electronics) Output Wave Shape of Controlled Rectifiers. Stebbins, Frick..... 1259
(Electronics) The "Thyratron" Motor.

Alexanderson, Mittag..... 1517
(Electronics) Theory of Multielectrode Tubes. Pidgeon..... 1485
(Electronics) "Thyratron" Tubes in Relay Practice. Widerōe..... 1347
(Electronics) Two Applications of Non-linear Circuits. Austin, Cooper.... 293
(Electronics) Vacuum Tubes as High Frequency Oscillators. Kelly, Samuel..... 1504
(Electronics) Voltage Control of Vapor Rectifiers. Journeaux..... 976
Disc., 1396; clos..... 1399
(Electrophysics) Electrical Figures on Plates in Air. Pleasants..... 300
Emission, Electron. Dushman..... 1054
Encouraging Initiative in the Engineering Student. Dawes..... 910
Disc., 1413, 1416; clos..... 1417
(Letter) McMains..... 1678
Energy Consumption of Multiple Unit Cars. Compton..... 280
Energy Consumption on Street Railways. Thomas..... 326
Engineer a Creator of Leisure, The. McClellan..... 777
Engineering Approach, Social Aspects of the. Wallace..... 395
Engineering Education Is Meeting the Challenge. Bibber..... 1356
Engineering, Research and. Jewett..... 781
Engineers of the Next Generation. Hirshfeld..... 857
Disc., 1413; clos..... 1416
(Letter) McMains..... 1678
Equation of Electrical Propogation, The. Pupin..... 691
Equivalent Circuits in Stability Studies. Dahl, Fitzgerald..... 1272
Equivalent Reactance of Synchronous Machines. Crary, March, Shildneck..... 124
Disc., 484, 603; clos..... 605
Evolution of Electrical Engineering Education, The. Jackson..... 770
Excitation, Electric Discharges in Gases, Ionization and. Tonks..... 239
Excitation, Silicon Steel With A-C and D-C. Edgar..... 318
Experimental Ignitron Rectifier, An. Ludwig, Maxfield, Toepfer..... 75
Disc., 488, 602; clos..... 602
Experiments in Fatal Electric Shock. Conrad, Haggard..... 399
Expulsion Oil Circuit Breaker, The. Schwager..... 1108
External Impedance Vs. Short-Circuit Currents. Robertson, Rogers..... 252

F

Factors Influencing the Insulation Coordination of Transformers—II. Bellaschi, Vogel..... 870
Disc., 1401; clos..... 1406
Ferromagnetism, Recent Theories of. Bitter..... 1246
Field Tests on Conductor Vibration. Wright, Mini..... 1123
Fiftieth Anniversary
(See Also Under "News of A.I.E.E. Activities")
Alternating Current Versus Direct Current. Stillwell..... 708
Century of Progress in 50 Years, A. Rice..... 689
Communication—Past and Present. Gherardi..... 745
Developments in Electric Power Transmission. Ryan..... 712
Digging in "The Mines of the Motors." Sprague..... 695
Early Headquarters of the Institute. Dunn..... 685
Engineer a Creator of Leisure, The. McClellan..... 777
Equation of Electrical Propagation, The. Pupin..... 691
Evolution of Electrical Engineering, The. Jackson..... 770
Fiftieth Anniversary of the A.I.E.E., The. Whitehead..... 643
Institute and Industrial Standardization, The. Skinner..... 681
Institute's First Half Century, The. Scott..... 645
Institute's Organization, The. Charlesworth..... 671
Lighting "A Century of Progress." Ryan..... 731
Research and Engineering. Jewett... 781
Some Contributions to the Electrical Industry. Chesney..... 726
Some High Lights of Electrical History. Thomson..... 758
Some Major Events in the Life of the Institute. Adams..... 686
Some Reminiscences of Niagara. Lincoln..... 720
Telegraph Men Founders of the A.I.E.E. McNicol..... 675
Water Power Development. Lee..... 715
Work of the Institute in Standardization, The. Kennelly..... 676
Filter for Program System, Line. Clement..... 562
Flashover Voltages of Insulators and Gaps. (Com. rept.)..... 882
Disc..... 1531, 1537
Fundamental Electrical Properties of Mercury Vapor and Monatomic Gases. Hull..... 1435
Fundamental Laws of Photoelectricity. Hughes..... 1149
Fundamental Properties of the Electron. Waterman..... 3
Fundamentals of Design of Electric Energy Delivery Systems. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
Furnace, The 3-Phase Electric Arc. Arnold (Dec. 1933, p. 839)
Disc., 492, 593; clos..... 594
Furnaces, Electrical Equipment for Induction Furnaces. Levy..... 43
Disc..... 452
Furnaces, High Frequency Induction. Adams, Hodge, MacKusick..... 194
Disc..... 452, 455, 592
Furnaces, Rocking Indirect Arc Electric. Crosby..... 132
Disc..... 452, 454, 591
Furnaces, Transformers for Electric. Stephens, Schell (Dec. 1933, p. 822)
Disc..... 452, 454

G

Gap, Calibration of the Sphere. Meador..... 942
Disc., 1652; clos..... 1659
Gaps, Flashover Voltages of Insulators and. (Com. rept.)..... 882
Disc..... 1531, 1537
Gaseous Discharge Lamps, Low Pressure. Parts I and II. Dushman.... 1204, 1283
Gases, Electric Discharges in, Ionization and Excitation. Tonks..... 239
Gases—Electric Discharges in—II Ions in Dense Gases. Darrow..... 388
Gases—III, Self-Maintained Discharges, Electric Discharges in. Slepian, Mason..... 511
Generation and Measurement—Heavy Surge Currents. Bellaschi..... 86
Disc., 481, 622; clos..... 623
Generator, A New Type of Warble Tone. Bliss..... 547
Generator Circuit Formulas, Impulse. Thomason..... 169
Disc..... 622
Generators, Control of Transients in Welding. Hornby..... 1598
Generators, Electronic Regulator for A-C. Gulliksen..... 873
Disc., 1530; clos..... 1567
Generators, Transient Voltages in Welding. Miller..... 1219
Glow Discharge Anemometer, A. Lindvall..... 1086
Graphical Solution of Steady State Stability, A. Dwight..... 566
Clos..... 1316
Graphite, Electrodes—Carbon and. Vosburgh (Dec. 1933, p. 844)
Disc..... 452
Grid Controlled Rectifiers and Inverters. Herskind..... 926
Disc., 1400; clos..... 1401
Ground Fault Protection, A New Method of. Starr..... 1472
Grounds by Distribution Ratio Method, Locating. Dunkle, DeShazo..... 258

H

Heat Flow in Turbine Generator Rotors. Peck..... 1359
Heavy Surge Currents—Generation and Measurement. Bellaschi..... 86
Disc., 622; clos..... 623
High Frequency Induction Furnaces. Adams, Hodge, MacKusick..... 194
Disc..... 452, 455, 592
High Lights of Electrical History, Some. Thomson..... 758
High Power Welding Rectifier, A. Silverman, Cox..... 1380
High Velocity Streams in the Vacuum Arc. Easton, Lucas, Creedy..... 1454
High Voltage Insulators. Smith, Lusignan..... 969
Disc., 1531, 1536; clos..... 1536
History, Some High Lights of Electrical. Thomson..... 758
Hudson Avenue Station, Switching at the. Gilt (Dec. 1933, p. 868)
Disc., 456; clos..... 585
(Human Relations) An Insight Into the Workings of the Institute. Johnson..... 1039
(Human Relations) Characteristics of a Group of Engineers. Spooner..... 1571
(Human Relations) Engineers of the Next Generation. Hirshfeld..... 857
Disc., 1413; clos..... 1416
(Human Relations) Industry Demands and Engineering Education. Morrow 518
Disc., 1413, 1418; clos..... 1422
(Human Relations) On the Schooling of Engineers. Dow..... 1589
(Human Relations) Scientific Thought and Social Reconstruction. Mees.. 381
(Human Relations) Social Aspects of the Engineering Approach. Wallace... 395
(Human Relations) The Engineer a Creator of Leisure. McClellan..... 777
(Human Relations) Toward the Making of a Profession. Wickenden..... 1147
Hydroelectric Developments, A Survey of. (Com. rept.)..... 988, 1086
Disc., 1651; clos..... 1652
(Hydroelectric) Some Reminiscences of Niagara. Lincoln..... 720
(Hydroelectric) Water Power Development. Lee..... 715

I

("Ignitron") A High Power Welding Rectifier. Silverman, Cox..... 1380
"Ignitron" Rectifier, An Experimental. Ludwig, Maxfield, Toepfer..... 75
Disc., 488, 602; clos..... 602
"Ignitron" Type of Inverter, The. Wagner, Ludwig..... 1384
(Illumination) Characteristics and Uses of the Carbon Arc. Kalb..... 1173
(Illumination) Incandescence—Some Theoretical Aspects. Hibben..... 1201
(Illumination) Lighting "A Century of Progress." Ryan..... 731
(Illumination) Low Pressure Gaseous Discharge Lamps. Parts I and II. Dushman..... 1204, 1283
(Illumination) Vapor Conducting Light Sources. Mailey..... 1447
Impedance Vs. Short-Circuit Currents, External. Robertson, Rogers..... 252

Impedances, Investigation of Rail. Trueblood, Wascheck (Dec. 1933, p. 898)
Disc., 450; clos. 589
Impulse and 60-Cycle Strength of Air. Bellaschi, Teague. 1638
Impulse Generator Circuit Formulas. Thomason. 169
Disc. 622
Incandescence—Some Theoretical Aspects. Hibben. 1201
Incremental Rates and Their Practical Application to Load Division, The Theory of. Parts I and II. Steinberg, Smith. 432, 571
Induction Furnaces, Electrical Equipment for. Levy. 43
Disc. 452
Induction Furnaces, High Frequency. Adams, Hodge, MacKusick. 194
Disc. 452, 455, 592
Induction Machines, Efficiency Tests of. Leader, Phillips. 1628
Induction Machines, Power Losses in. Narbutovskih. 1466
Induction Machines, Stray Load Loss Test on. Morgan, Narbutovskih. 286
Disc., 1317; clos. 1318
Induction Motor Locked Saturation Curves. Norman. 536
Disc. 1312
Induction Motors as Selsyn Drives. Nowacki (Dec. 1933, p. 848)
Induction Motors, Irregular Windings in Wound Rotor. Hellmund, Veinott. 342
Disc., 1316; clos. 1317
Inductor Alternators for Signaling Purposes. Merrill. 78
(Industrial) Electrodes—Carbon and Graphite. Vosburgh (Dec. 1933, p. 844)
Disc. 452
Industrial Electronic Tubes, Ratings of. Pike, Ulrey. 1577
(Industrial) The 3-Phase Electric Arc Furnace. Arnold (Dec. 1933, p. 839)
Disc., 452, 593; clos. 594
Industry Demands and Engineering Education. Morrow. 518
Disc., 1413, 1418; clos. 1422
(Letter) McMains. 1678
Insight Into the Workings of the Institute, An. Johnson. 1039
Institute, an Insight Into the Workings of the. Johnson. 1039
Institute and Industrial Standardisation, The. Skinner. 681
Institute Budget, The Story of the. Meyer. 375
Institute on Its 50th Anniversary, The. Whitehead. 1143
Institute's First Half Century, The. Scott. 645
Institute's Organization, The. Charlesworth. 671
Instrument, A Thermionic-Tube Measuring. Wagner. 1621
Instrument Springs, Better. Carson. 282
(Instruments) A Glow Discharge Anemometer. Lindvall. 1068
(Instruments) A New Demand Meter. Smith. 94
Disc., 625; clos. 626
(Instruments) A New Type of Warble Tone Generator. Bliss. 547
(Instruments) A Telemeter With Pilot Coil Transmitter. Lunas, Bernarde. 974
Disc., 1660; clos. 1661
(Instruments) A Unique Oscillograph. Oplinger. 290
(Instruments) An A-C Potentiometer. Burgwin. 108
Disc. 624
(Instruments) Calibration of the Sphere Gap. Meador. 942
Disc., 1652; clos. 1659
(Instruments) Cross Current of a 5-Arm Network. Seletsky, Anderson. 1004
Disc., 1660; clos. 1660
(Instruments) Cross Potential of a 4-Arm Network. Seletsky (Dec. 1933, p. 861)
Disc. 478
Instruments for Position Systems, Selsyn. Linville, Woodward. 953
Disc. 1660
(Instruments) Heavy Surge Currents—Generation and Measurement. 86
Disc., 481, 622; clos. 623
(Instruments) Impulse Generator Circuit Formulas. Thomason. 169
Disc. 622
(Instruments) Portable Schering Bridge for Field Tests. Hill, Watts, Burr. 176
Disc., 478, 618; clos. 1311
(Instruments) Simplified Measurements of Sound Absorption. Albert, Wagner. 1160
(Insulation) A New Laboratory for High Voltage Testing. Lusignan, Rorden. 1255
Insulation Coördination of Transformers—II, Factors Influencing the. Bellaschi, Vogel. 870
Disc., 1401; clos. 1406
(Insulation) Dielectric Properties of Cellulose Paper. Parts I and II. Whitehead, Greenfield. 1389, 1498
(Insulation) Impulse and 60-Cycle Strength of Air. Bellaschi, Teague. 1638
(Insulation) Measurement of Wetting of Dielectrics. McLean, Kohman. 255
(Insulation) Protecting Machines From Line Surges. Calvert. 139
Disc., 488; clos. 608
Insulation Resistance of Armature Windings. Wieseman. 1010
Disc., 1407; clos. 1524
Insulation Strength, Effect of Oil Pressure on. Scott. 308
(Insulation) The Life of Impregnated Paper. Whitehead. 244
(Insulation) The Present Theory of Electric Conduction. Herzfeld. 523
Insulator, A New Porcelain Post. Lapp. 922
Disc., 1531, 1540; clos. 1541
Insulator Arcover in Air. Maxstadt. 1062
(Letter) Walker. 1680
Insulator Characteristics, Radio Influence. Gilchrest. 899
Disc., 1531, 1539; clos. 1539
Insulator String, The. Sorensen. 1221
Insulator Surface and Radio Effects. Hillebrand, Miller. 1213
Insulator, The Suspension. Hawley. 895
Disc., 1531, 1536; clos. 1536
Insulators and Gaps, Flashover Voltages of. (Com. rept.). 882
Disc. 1531, 1537
Insulators, High Voltage. Smith, Lusignan. 969
Disc., 1531, 1536; clos. 1536
Insulators, Recent Developments in Suspension. Barrow. 867
Disc., 1531, 1539; clos. 1540
Insulators, Selection and Performance of Suspension. Sporn, Peterson, Mulford. 936
Disc., 1531, 1538; clos. 1538
Inverter, The "Ignitron" Type of. Wagner, Ludwig. 1384
Inverters, Grid Controlled Rectifiers and. Herskind. 926
Disc., 1400; clos. 1401
Investigation of Rail Impedances. Trueblood Wascheck. (Dec. 1933, p. 898)
Disc., 450; clos. 589
Ionisation and Excitation, Electric Discharges in Gases. Tonks. 239
Ions in Dense Gases, Electric Discharges in Gases—II Darrow. 388
Iron and Its Production, Cast. Healey.
Disc. 452, 455, 590
Iron Armored Aerial Communication Cable. Gilkeson, Hanks. 890
Disc., 1324; clos. 1325
Iron Shielding for Telephone Cables. Moore. 274
Disc., 1323; clos. 1324
Irregular Windings in Wound Rotor Induction Motors. Hellmund, Veinott. 342
Disc., 1316; clos. 1317
Italy-Sardinia Cable, The New. 528

J

Joint Use of Poles With 6,900-Volt Lines. Bullard, Keyes (Dec. 1933, p. 890)
Disc., 489, 491; clos. 610

L

Laboratory for High Voltage Testing, A New. Lusignan, Rorden. 1255
Lamps, Low Pressure Gaseous Discharge. Parts I and II. Dushman. 1204, 1283
Letters to the Editor
A Chart for Complex Quantities. Journeaux. 502
A Theory Regarding Ionisation in Cable Fibers. Del Mar. 500
Applications of Nonlinear Circuits. Lubkin. 502
Appreciation of the "Science Series." Roach, Palmer, Rhodes. 1031
Arcover Caused by Absorption Current. Walker. 1680
Cable Failure and Dielectric Deterioration. Dawes, Humphries. 1133
Designations of Photo-Electric Devices. Sharp. 1682
Early Development of the Transformer. Fleming. 634
Electrical Characteristics of Impregnated Cable Paper. Dawes. 1235
Engineering Education for Non-Engineers. Seeley. 1328
Engineering Education Should Train 2 Types of Engineers. McMains. 1678
Engineering Schools and the Changed Conditions. Dawes. 364
Engineering Service. James. 1427
Excitation and Ionisation in Gases. Sohon. 1235
Graduate Engineering Study Remote From Industrial Centers. Naeter. 501
Graphical Solution of Star-Delta Transformations. Edson. 1427
Ball. 1680
History of Thomson-Houston Company Name. Price-Hughes. 1133
Improving A.I.E.E. Convention Sessions. Holton. 500
Information on Oliver Heaviside. Tucker. 1554
Jogging the Rotor of an Alternator Electrically. Sills. 363
Limiting Reactances of 2-Terminal Reactance Arms. Luts. 634
New Method of Calculating Circuits, A. Barkey. 228
Di Toro. 229
Kouwenhoven. 229
Operational Calculus. Barkey. 1681
Overcompounded D-C Generators in Parallel Without Equalizer. Walter. 1553
Potential Available for Gaseous Discharge in Insulation Voids. Baker. 363
Public Versus Private Enterprise. Jakobsen. 500
Reignition of an Arc at Low Pressures. Mason. 1679
Rocking Indirect Arc Electric Furnaces. Buck. 1134
Rhoads. 1134
Shunt Wound Neutralized Phase Advancer. R. D. Ball. 501
Slide Rule Calculation of $\sqrt{a^2 + b^2}$. Smith. 228
Slide Rule Calculation of Unbalanced 3-Phase Currents. Seaman. 365, 1031
Stroboscope to Study Hunting of a Synchronous Motor, A New. Winkler. 1678
Theory of Probability. Smith. 229
Ferman. 1235
Wine Makers and Bottle Makers—A

Parable. Karapetoff 1681
Life of Impregnated Paper. Whitehead. 244
(Light) Characteristics and Uses of the Carbon Arc. Kalb 1173
(Light) Incandescence—Some Theoretical Aspects. Hibben 1201
(Light) Low Pressure Gaseous Discharge Lamps. Parts I and II. Dushman 1204, 1283
Light Sources, Vapor Conducting. Mailey 1447
Lighting "A Century of Progress Exposition." Ryan 731
(Lightning) Attenuation and Distortion of Waves. Bewley (Dec. 1933, p. 876)
Disc., 471, 595; clos. 597
(Lightning) Counterpoises for Transmission Lines. Fortescue (Dec. 1933, p. 908)
Disc., 467, 473, 598; clos. 599
(Lightning) Flashover Voltages of Insulators and Gaps. (Com. rept.) 882
Disc. 1531, 1537
Lightning Investigation on a 220-Kv System. Bell 1188
Lightning Investigation on Transmission Lines—IV. Lewis, Foust 1180
Lightning Measured on 4-Kv Overhead Circuits. Halperin, McEachron 33
Disc., 465, 616; clos. 617
Lightning Performance of 132-Kv Lines. Sporn, Gross 1195
Lightning Performance of 220-Kv Lines. (Com. rept.) 1443
Lightning Strokes, Multiple. McEachron 1633
Limits to Amplification. Johnson, Llewellyn 1449
Line Filter for Program System. Clement 562
Load Division, The Theory of Incremental Rates and Their Practical Application to. Parts I and II. Steinberg, Smith 432, 571
Load Loss Test on Induction Machines, Stray. Morgan, Narbutovskih 286
Disc., 1317; clos. 1318
Load Totalizing in the New York Area. Zogbaum 886
Disc., 1529; clos. 1529
Loading a Bank of Dissimilar Transformers. Bock 1597
Locating Grounds by Distribution Ratio Method. Dunkle, DeShazo 258
Locked Saturation Curves, Induction Motor. Norman 536
Disc. 1312
Locomotives, Diesel Electric Rail Cars and. Storer 1461
Locomotives, Protective Relays on Pa. Luther 261
Long Beach Plant No. 3., Switching at. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc. 456
Loss Characteristics of Silicon Steel at 60 Cycles With D-C Excitation. Edgar. 318
Loss Vs. Atmospheric Conditions, Corona. Hegy, Dunlap 272
Losses in Induction Machines, Power. Narbutovskih 1466
Losses of Power Transformers, Reactance and Stray. Cole 339
Losses With Nonuniform Windings, Transformer Reactance and. Stephens 347
Disc., 1318; clos. 1319
Loud Speakers and Microphones, Auditory Perspective. Wente, Thuras 17
Disc. 461
Low Pressure Gaseous Discharge Lamps. Parts I and II. Dushman 1204, 1283
Lubrication Improved, Trolley Wire. Lamson (Dec. 1933, p. 771)
Disc. 449, 1314

M

Machine Characteristics for Steady Welding. Creedy, Kogge, Danello .. 1268
Machines, Power Limits of Synchronous. Clarke, Lorraine (Nov. 1933, p. 780)
Disc., 475; clos. 601
Magnetic Systems, Transients in. Wagner 418
Magnetic Units, Actions on Electric and. Kennelly 402
Magnetizing Curve, Analytical Representation of a. Van Niekerk 1186
Major Events in the Life of the Institute, Some. Adams 686
Mapping of Fields. Weber 1563
(Mathematics) Operational Calculus. Gardner 1339
Measurement, Heavy Surge Currents—Generation and. Bellaschi 86
Disc., 481, 622; clos. 623
Measurement of Noise From Power Transformers. Fugill 1603
Measurement of Noise From Small Motors. Veinott 1624
Measurement of Wetting of Dielectrics. McLean, Kohman 255
(Measurements) A New Type of Warble Tone Generator. Bliss 547
(Measurements) A Telemeter With Pilot Coil Transmitter. Lunas, Bernarde 974
Disc., 1660; clos. 1661
(Measurements) A Unique Oscillograph. Oplinger 290
(Measurements) An A-C Potentiometer. Burgwin 108
Disc. 624
(Measurements) Calibration of the Sphere Gap. Meador 942
Disc., 1652; clos. 1659
(Measurements) Corona Loss Vs. Atmospheric Conditions. Hegy, Dunlap .. 272
(Measurements) Cross Current of a 5-Arm Network. Seletzky, Anderson 1004
Disc., 1660; clos. 1660
(Measurements) Cross Potential of a 4-Arm Network. Seletzky (Dec. 1933, p. 861)
Disc. 478
(Measurements) Impulse Generator Circuit Formulas. Thomason 169
Disc. 622
(Measurements) Investigation of Rail Impedances. Trueblood, Wascheck. (Dec. 1933, p. 898)
Disc., 450; clos. 589
Measurements of Sound Absorption, Simplified. Albert, Wagner 1160
(Measurements) Portable Schering Bridge for Field Tests. Hill, Watts, Burr 176
Disc., 478, 618; clos. 1311
(Measurements) Selsyn Instruments for Position Systems. Linville, Woodward 953
Disc. 1660
(Measurements) Vibration Analysis—Transmission Line Conductors. Buchanan 1478
Measuring Instrument, A Thermionic-Tube. Wagner 1621
Mercury Vapor and Monatomic Gases, Fundamental Electrical Properties of. Hull 1435
Message From the President. Johnson 1142, 1338
(Letter) James 1427
Meter, A New Demand. Smith 94
Disc., 625; clos. 626
(Metering) Load Totalizing in the New York Area. Zogbaum 886
Disc., 1529; clos. 1529
Microphones, Auditory Perspective—Loud Speakers and. Wente, Thuras 17
Disc. 461
Modern Transportation's Most Recent Contribution to Speed and Safety ... 349
Molecules, Electronic Theory of Valence, Structure of Atoms and. Huggins. 851
Monatomic Gases, Fundamental Electrical Properties of Mercury Vapor and. Hull 1435
Motor Locked Saturation Curves, Induction. Norman 536
Disc. 1312
Motor, The "Thyratron." Alexanderson, Mittag 1517
Motors as Selsyn Drives, Induction. Nowacki (Dec. 1933, p. 848)
Motors, Irregular Windings in Wound Rotor Induction. Hellmund, Veinott 342
Disc., 1316; clos. 1317
Motors, Measurement of Noise From Small. Veinott 1624
Multielectrode Tubes, Theory of. Pidgeon 1485
Multiple Lightning Strokes, McEachron .. 1633
Multiple Unit Cars, Energy Consumption of. Compton 280

N

(National Research Council) The Present Theory of Electric Conduction. Herzfeld 523
Network, Cross Current of a 5-Arm. Seletzky, Anderson 1004
Disc., 1660; clos. 1660
Network, Cross Potential of a 4-Arm. Seletzky (Dec. 1933, p. 861)
Disc. 478
Network Distribution, Radial Versus Primary. Wulfing 38
Disc. 489, 610
(Networks) External Impedance Vs. Short-Circuit Currents. Robertson, Rogers 252
Networks, Theory of Primary. Parts I and II. Starr 310, 426
Disc. 1315
New Demand Meter, A. Smith 94
Disc., 625; clos. 626
New High Speed Air Circuit Breaker, A. Keep 323
New Laboratory for High Voltage Testing, A. Lusignan, Rorden 1255
New Method of Ground Fault Protection, A. Starr 1472
New Porcelain Post Insulator, A. Lapp ... 922
Disc., 1531, 1540; clos. 1541
New Timer for Resistance Welding, A. Stoddard 1366
New Type of Warble Tone Generator, A. Bliss 547
Nitrogen in Metallic Arc Weld Metal, A Study of 1250
Noise From Power Transformers, Measurement of. Fugill 1603
Noise From Small Motors, Measurement of. Veinott 1624

O

Oil Circuit Breaker, The Expulsion. Schwager 1108
Oil Circuit Breakers, Automatic Reclosing of. Anderson 48
Disc., 466, 614; clos. 615
Oil Pressure on Insulation Strength, Effect of. Scott 308
Operational Calculus. Gardner 1339
(Letter) Barkey 1681
Oscillators, Vacuum Tubes as High Frequency. Kelly, Samuel 1504
Oscillograph, A Unique. Oplinger 290
Output Wave Shape of Controlled Rectifiers. Stebbins, Frick 1259
Overloading of Power Transformers. Montsinger, Dann 1353
Overloads on Transformer Life, Effect of. Nichols 1616
Overvoltages on Transmission Lines. Gilkeson, Jeanne 1301

P

Paper, The Life of Impregnated. Whitehead 244
Pantograph Trolleys I—Design Features. Schaake 182
Disc., 451, 1313; clos. 589
Pantograph Trolleys II—Operating Fea-

tures. Pickens..... 190
Disc..... 451, 1313
Petersen Coil Tests on 140-Kv System. North, Eaton..... 63
Disc., 462, 612; clos..... 614
Photoelectricity, Fundamental Laws of. Hughes..... 1149
Pilot Coil Transmitter, A Telemeter With. Lunas, Bernarde..... 974
Disc., 1660; clos..... 1661
Pitt-Westinghouse Graduate Program, The. Dyshe, Hellmund..... 103
Disc., 446, 587; clos..... 588
Poles With 6,900-Volt Lines, Joint Use of. Bullard, Keyes (Dec. 1933, p. 890)
Disc., 489, 491; clos..... 610
Porcelain Post Insulator, A New. Lapp.. 922
Port Washington Power Plant Design. Post..... 264
Portable Schering Bridge for Field Tests. Hill, Watts, Burr..... 176
Disc., 478, 618; clos..... 1311
Position Systems, Selsyn Instruments for. Linville, Woodward..... 953
Disc..... 1660
Potential of a 4-Arm Network, Cross. Seletsky (Dec. 1933, p. 861)
Disc..... 478
Potentiometer, An A-C. Burgwin..... 108
Disc..... 624
Power Factor, Simultaneous Control of Voltage and. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
(Power Generation) A 7,000-Ampere Station Bus. Uniand, Morton, Bacon.. 994
Disc., 1646; clos..... 1650
(Power Generation) A Survey of Hydro-electric Developments. (Com. rept.)..... 988, 1086
Disc., 1651; clos..... 1652
(Power Generation) Electric Power Switching. Lovell..... 147
Disc..... 456
(Power Generation) Port Washington Power Plant Design. Post..... 264
(Power Generation) Switching at Long Beach Plant No. 3. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc..... 456
(Power Generation) Switching at Richmond Station. Bailey, Ford..... 156
Disc., 456; clos..... 586
(Power Generation) Switching at State Line Station. White..... 148
Disc., 456; clos..... 1312
(Power Generation) Switching at the Connors Creek Plant. Fugill..... 162
Disc., 456; clos..... 586
(Power Generation) Switching at the Hudson Avenue Station. Gilt (Dec. 1933, p. 868)
Disc., 456; clos..... 585
(Power Generation) The Theory of Incremental Rates and Their Practical Application to Load Division. Parts I and II. Steinberg, Smith..... 432, 571
(Power Generation) Voltage Regulation and Load Control. Forbes, Searing..... 903
Disc., 1525; clos..... 1528
Power Limit of a Transmission System. Peterson (Aug. 1933, p. 569)
Disc., 477; clos..... 602
Power Limits of Synchronous Machines. Clarke, Lorraine (Nov. 1933, p. 780)
Disc., 475; clos..... 601
Power Limits of 220-Kv Transmission Lines, Kroneberg, Macferran (Nov. 1933, p. 758)
Disc., 473, 601; clos..... 601
Power Losses in Induction Machines. Narbutovskih..... 1466
Power Systems, Decrement Curves for. Dalziel..... 331
(Power Systems) Shunt Reistors for Reactors—II. Kierstead, Bewley..... 411
Disc., 1315; clos..... 1315
Present Theory of Electric Conduction, The. Hersfeld..... 523
Primary Network Distribution, Radial Versus. Wulfing..... 38
Disc..... 489, 492, 610
Primary Networks, Theory of. Parts I and II. Starr..... 310, 426
Disc..... 1315
Profession, Toward the Making of a. Wickenden..... 1146
Program System, Line Filter for. Clement..... 562
Program System, Wide-Band Open-Wire. Hamilton..... 550
Protecting Machines From Line Surges. Calvert..... 139
Disc., 488; clos..... 608
(Protection) A New High Speed Air Circuit Breaker. Keep..... 322
(Protection) Counterpoises for Transmission Lines. Fortescue (Dec. 1933, 908)
Disc., 467, 473, 598; clos..... 599
(Protection) Locating Grounds by Distribution Ratio Method. Dunkle, DeShazo..... 258
(Protection) Some Recent Relay Developments. Hunt, Kroneberg..... 530
(Protection) The Expulsion Oil Circuit Breaker. Schwager..... 1108
(Protection) "Thyratron" Tubes in Relay Practice. Widerōe..... 1347
(Protection) Two Applications of Nonlinear Circuits. Austin, Cooper.... 293
(Protective Devices) A New Method of Ground Fault Protection. Starr.... 1472
(Protective Devices) Automatic Reclosing of Oil Circuit Breakers. Anderson..... 48
Disc., 466, 614; clos..... 615
(Protective Devices) Control of Distance Relay Potential Connections. Warrington..... 206
Disc., 465; clos..... 617
(Protective Devices) Lightning Measured on 4-Kv Overhead Circuits. Halperin, McEachron..... 33
Disc., 564, 616; clos..... 617
(Protective Devices) Petersen Coil Tests on 140-Kv System. North, Eaton.. 63
Disc., 462, 612; clos..... 614
(Protective Devices) Shunt Resistors for Reactors—II. Kierstead, Bewley... 411
Disc., 1315; clos..... 1315
Protective Relays on Pa. Locomotives. Luther..... 261

R

Radial Versus Primary Network Distribution. Wulfing..... 38
Disc..... 489, 492, 610
Radio Circuits, Resonant Lines in. Terman..... 1046
Radio Effects, Insulator Surface and. Hillebrand, Miller..... 1213
Radio Influence Insulator Characteristics. Gilchrist..... 899
Disc., 1531, 1539; clos..... 1539
Rail Impedances, Investigation of. Trueblood, Wascheck (Dec. 1933, p. 898)
Disc., 450; clos..... 589
(Railroads) Steam Ejector System for Car Conditioning. Ashley..... 406
Railways, Energy Consumption on Street. Thomas..... 326
Rates and Their Practical Application to Load Division, The Theory of Incremental. Parts I and II. Steinberg, Smith..... 432, 571
Ratings of Industrial Electronic Tubes. Pike, Ulrey..... 1577
Reactance and Stray Losses of Power Transformers. Cole..... 338
Reactance of 3-Conductor Cables, Resistance and. Salter, Shanklin, Wiseman..... 1581
Reactors—II, Shunt Reistors for. Kierstead, Bewley..... 411
Disc., 1315; clos..... 1315
Recent Developments in Power Line Carrier. Johnson..... 542
Disc..... 1325
Recent Developments in Suspension Insulators. Barrow..... 867
Disc., 1531, 1539; clos..... 1540
Recent Theories of Ferromagnetism. Bitter..... 1246
Recommended Transformer Standards. Putman, Clem..... 1594
Rectifier, A High Power Welding. Silverman, Cox..... 1380
Rectifier, A Vacuum Tube Controlled. Foos..... 568
Rectifiers and Inverters, Grid Controlled. Herskind..... 926
Disc., 1400; clos..... 1401
Rectifier, An Experimental "Ignitron." Ludwig, Maxfield, Toepfer..... 75
Disc., 488, 602; clos..... 602
Rectifiers on System Wave Shape, Effects of. Blye, Kent..... 54
Disc., 483, 608; clos..... 609
Rectifiers, Output Wave Shape of Controlled. Stebbins, Frick..... 1266
Rectifiers, Voltage Control of Vapor. Journeaux..... 976
Disc., 1396; clos..... 1399
(Refrigeration) Steam Ejector System for Car Conditioning. Ashley..... 406
Regulator for A-C Generators, Electronic. Gulliksen..... 877
Disc., 1530; clos..... 1531
Reignition of an Arc at Low Pressures. Mackeown, Bowden, Cobine..... 1081
(Letter) Mason..... 1679
Relay Action During Oscillations, Distance. Banoker, Hunter..... 1073
Disc., 1320; clos..... 1322
Relay Developments, Some Recent. Hunt, Kroneberg..... 530
Relay Potential Connections, Control of Distance. Warrington..... 206
Disc., 465; clos..... 617
Relay Practice, "Thyratron" Tubes in. Widerōe..... 1347
Relays on Pa. Locomotives, Protective. Luther..... 261
Report of the Board of Directors..... 1095
(Research) A Glow Discharge Anemometer. Lindvall..... 1068
Research and Engineering. Jewett..... 781
(Research) Characteristics of a Group of Engineers. Spooner..... 1571
(Research) Dielectric Properties of Cellulose Paper. Parts I and II. Whitehead, Greenfield..... 1389, 1498
(Research) Experiments in Fatal Electric Shock. Conrad, Haggard..... 399
(Research) Measurement of Wetting of Dielectrics. McLean, Kohman.... 255
(Research) Reignition of an Arc at Low Pressure. Mackeown, Bowden, Cobine..... 1081
(Research) Scientific Thought and Social Reconstruction. Mees..... 381
(Research) The Life of Impregnated Paper. Whitehead..... 244
Resistance and Reactance of 3-Conductor Cables. Salter, Shanklin, Wiseman..... 1581
Resistors for Reactors—II, Shunt. Kierstead, Bewley..... 411
Disc., 1315; clos..... 1315
Resonant Lines in Radio Circuits. Terman..... 1046
Richmond Station, Switching at. Bailey, Ford..... 156
Disc., 456; clos..... 586
Rocking Indirect Arc Electric Furnaces. Crosby..... 132
Disc..... 452, 454, 591
(Letters)
Buck..... 1134
Rhoads..... 1134
Rotors, Heat Flow in Turbine Generator. Peck..... 1359

S

Sardinia Cable, The New Italy-Saturation Curves, Induction Motor..... 528

Locked. Norman..... 536
Disc..... 1312
Schooling of Engineers, On the. Dow... 1589
"Science Series"
Electric Discharges in Gases, Ionization and Excitation. Tonks..... 239
Electric Discharges in Gases—II, Ions in Dense Gases. Darrow..... 388
Electric Discharges in Gases—III, Self-Maintained Discharges. Slepian and Mason..... 511
Electron Emission. Dushman..... 1054
Fundamental Electrical Properties of Mercury Vapor and Monatomic Gases. Hull..... 1435
Fundamental Laws of Photoelectricity. Hughes..... 1149
Fundamental Properties of the Electron. Waterman..... 3
Mapping of Fields. Weber..... 1563
Operational Calculus. Gardner..... 1339
Recent Theories of Ferromagnetism. Bitter..... 1246
Structure of Atoms and Molecules. Huggins..... 851
Theory of Probability. Bennett (Nov. 1933)
Scientific Thought and Social Reconstruction. Mees..... 381
Selection and Performance of Suspension Insulators. Sporn, Peterson, Mulford..... 936
Disc., 1531, 1533; clos..... 1538
Selsyn Drives, Induction Motors as. Nowacki (Dec. 1933, p. 848)
Selsyn Instruments for Position Systems. Linville, Woodward..... 953
Disc..... 1660
Shielding for Telephone Cables, Iron. Moore..... 274
Disc., 1323; clos..... 1324
Shock, Experiments in Fatal Electric. Conrad, Haggard..... 399
Short-Circuit Currents, External Impedance Vs. Robertson, Rogers..... 252
Shunt Resistors for Reactors—II. Kierstead, Bewley..... 411
Disc., 1315; clos..... 1315
Signaling Purposes, Inductor Alternators for. Merrill..... 78
Significant Electrical Developments..... 840
Silicon Steel With A-C and D-C Excitation. Edgar..... 318
Simplified Measurements of Sound Absorption. Albert, Wagner..... 1160
Simultaneous Control of Voltage and Power Factor. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
Social Aspects of the Engineering Approach. Wallace..... 395
Solution of Steady State Stability, A Graphical. Dwight..... 566
Clos..... 1316
Some New Developments in Supervisory Control. Reagan..... 949
Some Recent Relay Developments. Hunt, Kroneberg..... 530
Sound Absorption, Simplified Measurements of. Albert, Wagner..... 1160
(So. Calif. Ed. Co.) Switching at Long Beach Plant No. 3. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc..... 456
Sphere Gap, Calibration of the. Meador..... 942
Disc., 1652; clos..... 1659
Split Winding Transformers. Chase, Garin..... 914
Disc., 1411; clos..... 1412
Springs, Better Instrument. Carson..... 282
Stability, A Graphical Solution of Steady State. Dwight..... 566
Clos..... 1316
Stability of Composite Systems, Steady State. Crary (Nov. 1933, p. 787)
Disc., 475, 477; clos..... 594
(Stability) Power Limit of a Transmission System. Peterson (Aug. 1933, p. 569)
Disc., 477; clos..... 602
(Stability) Power Limits of Synchronous Machines. Clarke, Lorraine (Nov. 1933, p. 780)
Disc., 475; clos..... 601
Stability Studies, Equivalent Circuits in. Dahl, Fitzgerald..... 1272
(Stability) Switching at Long Beach Plant No. 3. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc..... 456
Stabilized Feed-Back Amplifiers. Black. 114
Disc..... 461, 590, 1311
Standardization, The Institute and Industrial. Skinner..... 681
Standardization, The Work of the Institute in. Kennelly..... 676
Standards, Recommended Transformer. Putman, Clem..... 1594
State Line Station, Switching at. White..... 148
Disc., 456; clos..... 1312
Static, The "Compandor"—An Aid Against Radio. Mathes, Wright.... 860
Station Bus, A 7,000-Ampere. Unland, Morton, Bacon..... 994
Disc., 1646; clos..... 1650
Steady State Stability of Composite Systems. Crary (Nov. 1933, p. 787)
Disc., 475, 477; clos..... 594
(Steam-electric) Port Washington Power Plant Design. Post..... 264
Steam Ejector System for Car Conditioning. Ashley..... 406
Steel, Electrical Practices in USSR. Fox..... 1251
Story of the Institute Budget, The. Meyer..... 375
Stray Load Loss Test on Induction Machines. Morgan, Narbutovskih.... 386
Disc., 1317; clos..... 1318
Street Railways, Energy Consumption on. Thomas..... 326
Structure of Atoms and Molecules, Electronic Theory of Valence. Huggins..... 851
Student, Encouraging Initiative in the Engineering. Dawes..... 910
Disc., 1413, 1416; clos..... 1417
Study of Nitrogen in Metallic Arc Weld Metal, A..... 1250
Supervisory Control, Some New Developments in. Reagan..... 949
Survey of Hydroelectric Developments, A. (Com. rept.)..... 988, 1086
Disc., 1651; clos..... 1652
Suspension Insulator, The. Hawley..... 895
Disc., 1531, 1536; clos..... 1536
Switching at Long Beach Plant No. 3. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc..... 456
Switching at Richmond Station. Bailey, Ford..... 156
Disc., 456; clos..... 586
Switching at State Line Station. White. 148
Disc., 456; clos..... 1312
Switching at the Connors Creek Plant. Fugill..... 162
Disc., 456; clos..... 586
Switching at the Hudson Avenue Station. Gilt (Dec. 1933, p. 868)
Disc., 456; clos..... 585
Switching, Electric Power. Lovell..... 147
Disc..... 456
Synchronizer, A Compensated Automatic. Seeley..... 960
Clos..... 1528
Synchronous Machines, Equivalent Reactance of. Crary, March, Shildneck..... 124
Disc., 484, 603; clos..... 605
Synchronous Machines, Power Limits of. Clarke, Lorraine (Nov. 1933, p. 780)
Disc., 475; clos..... 601

T

Telemeter With Pilot Coil Transmitter, A. Lunas, Bernarde..... 974
Disc., 1660; clos..... 1661
Telegraph Men Founders of the A.I.E.E. McNicol..... 675
Telephone Cables, Iron Shielding for. Moore..... 274
Disc., 1323; clos..... 1324
Television by Electronic Methods. Brolly..... 1153
Testing, A New Laboratory for High Voltage. Lusignan, Rorden..... 1255
Tests at Trafford, Counterpoise. Fortescue, Fielder..... 1116
Tests of Induction Machines, Efficiency. Leader, Phillips..... 1628
Tests of the Counterpoise, Theory and. Bewley..... 1163
Tests on Conductor Vibration, Field. Wright, Mini..... 1123
Tests on 140-Kv System, Peterson Coil. North, Eaton..... 63
Disc., 462, 612; clos..... 614
Tests, Portable Schering Bridge for Field. Hill, Watts, Burr..... 176
Disc., 478, 681; clos..... 1311
The Expulsion Oil Circuit Breaker. Schwager..... 1108
Theory and Tests of the Counterpoise. Bewley..... 1163
Theory of Electric Conduction, The Present. Herzfeld..... 523
Theory of Incremental Rates and Their Practical Application to Load Division, The. Parts I and II. Steinberg, Smith..... 432, 571
Theory of Multielectrode Tubes. Pidgeon..... 1485
Theory of Primary Networks. Parts I and II. Starr..... 310, 426
Disc..... 1315
Thermionic-Tube Measuring Instrument, A. Wagner..... 1621
Three-Phase Electric Arc Furnace, The. Arnold (Dec. 1933, p. 839)
Disc., 452, 593; clos..... 594
"Thyratron" Motor, The. Alexanderson, Mittag..... 1517
"Thyratron" Tubes in Relay Practice. Widerōe..... 1347
Timer for Resistance Welding, A New. Stoddard..... 1366
Toward the Making of a Profession. Wickenden..... 1146
Trafford, Counterpoise Tests at. Fortescue, Fielder..... 1116
Transformer Life, Effect of Overloads on. Nichols..... 1616
Transformer Reactance and Losses With Nonuniform Windings. Stephens.. 346
Disc., 1318; clos..... 1319
Transformer Standards, Recommended. Putman, Clem..... 1594
Transformers—II, Factors Influencing the Insulation Coördination of. Bellaschi, Vogel..... 870
Disc., 1401; clos..... 1406
Transformers for Electric Furnaces. Stephens, Schell (Dec. 1933, p. 822)
Disc..... 452, 454
Transformers, Loading a Bank of Dissimilar. Book..... 1597
Transformers, Measurement of Noise From Power. Fugill..... 1603
Transformers, Overloading of Power. Montsinger, Dann..... 1353
Transformers, Reactance and Stray Losses of Power. Cole..... 338
Transformers, Split Winding. Chase, Garin..... 914
Disc., 1411; clos..... 1412
Transients in Magnetic Systems. Wagner..... 418
Transients in Welding Generators, Control of. Hornby..... 1598
Transient Voltages in Welding Generators. Miller..... 1296
(Transmission) A New Porcelain Post Insulator. Lapp..... 922
Disc., 1531, 1540; clos..... 1541
(Transmission) An Economic Study of Suburban Distribution. Sweetnam,

Corney..... 97
Disc..... 489, 610
(Transmission) Attenuation and Distortion of Waves. Bewley (Dec. 1933, p. 876)
Disc., 471, 595; clos..... 597
(Transmission) Corona Loss Vs. Atmospheric Conditions. Hegy, Dunlap. 272
(Transmission) Corona Losses From Conductors of 1.4-Inch Diameter. Carroll, Cozzens, Blakeslee (Dec. 1933, p. 854)
Disc., 470, 600; clos..... 1310
(Transmission) Counterpoise Tests at Trafford. Fortescue, Fielder..... 1116
(Transmission) Decrement Curves for Power Systems. Dalziel..... 331
Transmission, Developments in Electric Power. Ryan..... 712
(Transmission) Dielectric Properties of Cellulose Paper. Parts I and II. Whitehead, Greenfield..... 1389, 1498
(Transmission) Distance Relay Action During Oscillations. Bancker, Hunter..... 1073
Disc., 1320; clos..... 1322
(Transmission) Effects of Rectifiers on System Wave Shape. Blye, Kent... 54
Disc., 483, 608; clos..... 609
(Transmission) Electric Power Switching. Lovell..... 147
Disc..... 456
(Transmission) Equivalent Circuits in Stability Studies. Dahl, Fitzgerald. 1272
(Transmission) Field Tests on Conductor Vibration. Wright, Mini..... 1123
(Transmission) Flashover Voltages of Insulators and Gaps. (Com. rept.). 882
Disc..... 1531, 1537
(Transmission) Fundamentals of Design of Electric Energy Delivery Systems. Johnson, Henry (Dec. 1933, p. 831)
Disc., 489, 493, 610; clos..... 612
(Transmission) High Voltage Insulators. Smith, Lusignan..... 969
Disc., 1531, 1536; clos..... 1536
(Transmission) Insulator Arcover in Air. Maxstadt..... 1062
(Transmission) Insulator Surface and Radio Effects. Hillebrand, Miller.. 1213
(Transmission) Joint Use of Poles With 6,900-Volt Lines. Bullard, Keyes (Dec. 1933, p. 890)
Disc., 489, 491; clos..... 610
(Transmission) Lightning Investigation on a 220-Kv System. Bell..... 1188
(Transmission) Lightning Performance of 132-Kv Lines. Sporn, Gross.... 1195
(Transmission) Lightning Performance of 220-Kv Lines. (Com. rept.).... 1443
Transmission Line Conductors, Vibration Analysis. Buchanan..... 1478
Transmission Lines, Auditory Perspective. Affel, Chesnut, Mills..... 28
Transmission Lines, Coaxial Communication. Schelkunoff..... 1592
Transmission Lines, Counterpoises for. Fortescue (Dec. 1933, p. 908)
Disc., 467, 473, 598; clos..... 599
Transmission Lines—IV, Lightning Investigation on. Lewis, Foust..... 1180
Transmission Lines, Power Limits of 220-Kv. Kroneberg, Macferran (Nov. 1933, p. 758)
Disc., 473, 601; clos..... 601
(Transmission) Loading a Bank of Dissimilar Transformers. Bock..... 1597
(Transmission) Locating Grounds by Distribution Ratio Method. Dunkle, DeShazo..... 258
(Transmission) Measurement of Noise From Power Transformers. Fugill. 1603
(Transmission) Multiple Lightning Strokes. McEachron..... 1633
(Transmission) New Laboratory for High Voltage Testing, A. Lusignan, Rorden..... 1255
(Transmission) Overvoltages on Transmission Lines. Gilkeson, Jeanne.. 1301
(Transmission) Petersen Coil Tests on 140-Kv System. North, Eaton..... 63
Disc., 462, 612; clos..... 614
(Transmission) Radial Versus Primary Network Distribution. Wulfing... 38
Disc..... 489, 492, 610
(Transmission) Radio Influence Insulator Characteristics. Gilchrest..... 🖙
Disc., 1531, 1539; clos..... 1539
(Transmission) Recent Developments in Suspension Insulators. Barrow... 867
Disc., 1531, 1539; clos..... 1540
(Transmission) Resistance and Reactance of 3-Conductor Cables. Salter, Shanklin, Wiseman..... 1581
(Transmission) Selection and Performance of Suspension Insulators. Sporn, Peterson, Mulford..... 936
Disc., 1531, 1538; clos..... 1538
(Transmission) Simultaneous Control of Voltage and Power Factor. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
(Transmission) Some Recent Relay Developments. Hunt, Kroneberg.... 530
(Transmission) Switching at Long Beach Plant No. 3. Kroneberg, Bulkley, Andree (Dec. 1933, p. 826)
Disc..... 456
(Transmission) Switching at Richmond Station. Bailey, Ford..... 156
Disc., 456; clos..... 586
(Transmission) Switching at State Line Station. White..... 148
Disc., 456; clos..... 1312
(Transmission) Switching at the Connors Creek Plant. Fugill..... 162
Disc., 456; clos..... 586
(Transmission) Switching at the Hudson Avenue Station. Gilt (Dec. 1933, p. 868)
Disc., 456; clos..... 585
Transmission System, Power Limit of a. Peterson (Aug. 1933, p. 569)
Disc., 477; clos..... 602
(Transmission) The Insulator String. Sorensen..... 1221
(Transmission) The Suspension Insulator. Hawley..... 895
Disc., 1531, 1536; clos..... 1536
(Transmission) Theory and Tests of the Counterpoise. Bewley..... 1163
Transmitter, A Telemeter With Pilot Coil. Lunas, Bernarde..... 974
Disc., 1660; clos..... 1661
(Transportation) Diesel Electric Rail Cars and Locomotives. Storer..... 1461
(Transportation) Digging in "The Mines of the Motors." Sprague.. 695
(Transportation) Energy Consumption of Multiple Unit Cars. Compton. 280
(Transportation) Energy Consumption on Street Railways. Thomas.... 326
(Transportation) Investigation of Rail Impedances. Trueblood, Wascheck (Dec. 1933, p. 898)
Disc., 450; clos..... 589
(Transportation) Protective Relays on Pa. Locomotives. Luther..... 261
Trolley Wire Lubrication Improved. Lamson (Nov. 1933, p. 771)
Disc..... 449, 1314
Trolleys I—Design Features, Pantograph. Schaake..... 182
Disc., 451, 1313; clos..... 589
Trolleys II—Operating Features, Pantograph. Pickens..... 191
Disc..... 451, 1313
Tube Controlled Rectifier, A Vacuum. Foos..... 568
Turbine Generator Rotors, Heat Flow in. Peck..... 1359
Two Applications of Nonlinear Circuits. Austin, Cooper..... 293

U

Unique Oscillograph, A. Oplinger..... 290
Units, Actions on Electric and Magnetic. Kennelly..... 402
USSR Steel, Electrical Practices in. Fox..... 1251

V

Vacuum Tube, A 100-Kw..... 1266
Vacuum Tube Controlled Rectifier, A. Foos..... 568
Vacuum Tubes as High Frequency Oscillators. Kelly, Samuel..... 1504
Vapor Conducting Light Sources. Mailey..... 1447
Vapor Rectifiers, Voltage Control of. Journeaux..... 976
Disc., 1396; clos..... 1399
Vibration Analysis—Transmission Line Conductors. Buchanan..... 1478
Vibration, Field Tests on Conductor. Wright, Mini..... 1123
Voltage and Power Factor, Simultaneous Control of. Blume, Woods (Dec. 1933, p. 884)
Disc..... 483, 607
Voltage Control of Vapor Rectifiers. Journeaux..... 976
Disc., 1396; clos..... 1399
Voltage Regulation and Load Control. Forbes, Searing..... 903
Disc., 1525; clos..... 1528

W

Warble Tone Generator, A New Type of. Bliss..... 547
Water Power Development. Lee..... 715
Wave Shape, Effects of Rectifiers on System. Blye, Kent..... 54
Disc., 483, 608; clos..... 609
Weld Metal, A Study of Nitrogen in Metallic Arc..... 1250
Welding, A New Timer for Resistance. Stoddard..... 1366
Welding Generators, Control of Transients in. Hornby..... 1598
Welding Generators, Transient Voltages in. Miller..... 1296
Welding, Machine Characteristics for Steady. Creedy, Kogge, Danello.. 1268
Welding Rectifier, A High Power. Silverman, Cox..... 1380
Westinghouse Graduate Program, The Pitt-, Dyche, Hellmund..... 103
Disc., 466, 587; clos..... 588
Wide-Band Open-Wire Program System. Hamilton..... 550
Wide Band Transmission Over Coaxial Lines. Espenschied, Strieby..... 1371
Work of the Institute in Standardisation, The. Kennelly..... 676

Division II—Author Index

Ackermann, Otto. Disc..... 595
Adams, C. A. Some Major Events in the Life of the Institute..... *686
Adams, C. A.; Hodge, MacKusick. High Frequency Induction Furnaces..... 194
Adams, F. J. Disc..... 1320
Affel, H. A.; Chesnut, Mills. Auditory Perspective—Transmission Lines... 28
Albert, A. L.; Wagner. Simplified Measurements of Sound Absorption..... 1160
Alexanderson, E. F. W.; Mittag. The "Thyratron" Motor..... 1517
Alfriend, J. V., Jr. Disc..... 454
Alger, P. L. Disc. 1316, 1317, 1407, 1411, 1413
Anderson, A. E. Automatic Reclosing of Oil Circuit Breakers..... 48
Disc. clos..... 615

NOTE—An asterisk (*) before a page number denotes publication of author's photograph on that page.

Anderson, J. R.; Seletsky. Cross Current of a 5-Arm Network..... 1004
Disc. clos..... 1660
Andree, J. A.; Kroneberg, Bulkley. Switching at Long Beach Plant No. 3 (Dec. 1933, p. 826)
Arnold, Samuel, 3rd. The 3-Phase Electric Arc Furnace (Dec. 1933, p. 839)
Disc. clos..... 594
Ashley, C. M. Steam Ejector System for Car Conditioning..... 406
Austin, T. M.; Cooper. Two Applications of Nonlinear Circuits..... 293

B

Backus, C. D. Disc..... 1418
Bacon, V. R.; Unland, Morton. A 7,000-Ampere Station Bus..... 994
Disc. clos..... 1650
Bailey, Raymond; Ford. Switching at Richmond Station..... 156
Disc. clos..... 586
Baker, E. B. (Letter) Potential Available for Gaseous Discharge in Insulation Voids..... 363
Ball, D. J. (Letter) Graphical Solution of Star-Delta Transformations..... 1680
Ball, R. D. (Letter) Shunt Wound Neutralized Phase Advancer..... 501
Balsbaugh, J. C. Disc..... 478
Bancker, E. H.; Hunter. Distance Relay Action During Oscillations..... 1073
Disc. clos..... 1322
Bang, A. F. Disc..... 1651
Barkey, I. H. (Letters) A New Method of Calculating Circuits..... 228
Operational Calculus..... 1681
Barrow, G. M. Recent Developments in Suspension Insulators..... 867
Disc. clos..... 1540
Basberg, A. (Letter) Electrical Characteristics of Impregnated Cable..... 1235
Bassett, W. H., Jr. Disc..... 449
Beck, Edward. Disc..... 438, 616
Beckwith, Sterling. Disc..... 487
Bedell, E. H.; Kerney. Auditory Perspective—System Adaptation..... 216
Beeuwkes, Reinier. Disc..... 449
Bell, Edgar. Lightning Investigation on a 220-Kv System..... 1188
Bellaschi, P. L. Heavy Surge Currents—Generation and Measurement..... 86
Disc. clos..... 623
Bellaschi, P. L. Disc..... 1652, 1653
Bellaschi, P. L.; Teague. Impulse and 60-Cycle Strength of Air..... 1638
Bellaschi, P. L.; Vogel. Factors Influencing the Insulation Coördination of Transformers—II..... 870
Disc. clos..... 1406
Bergvall, R. C. Disc..... 601
Bernarde, H. L.; Lunas. A Telemeter With Pilot Coil Transmitter..... 974
Disc. clos..... 1661
Bewley, L. V. Attenuation and Distortion of Waves (Dec. 1933, p. 876)
Disc. clos..... 597
Theory and Tests of the Counterpoise..... 1163
Bewley, L. V. Disc..... 467, 1401
Bewley, L. V.; Kierstead. Shunt Resistors for Reactors—II..... 411
Disc. clos..... 1315
Bibber, H. W. Engineering Education Is Meeting the Challenge..... 1356
Bibber, H. W. Disc..... 1416, 1419
Bitter, Francis. Recent Theories of Ferromagnetism..... 1246
Black, H. S. Stabilized Feed-Back Amplifiers..... 114
Blake, D. K. Disc..... 489
Blakeslee, T. M.; Carroll, Cozzens. Corona Losses From Conductors of 1.4-Inch Diameter (Dec. 1933, p. 854)
Disc. clos..... 1310
Bliss, W. H. A New Type of Warble Tone Generator..... 547
Blume, L. F.; Woods. Simultaneous Control of Voltage and Power Factor (Dec. 1933, p. 884)
Blye, P. W. Disc..... 1400
Blye, P. W.; Kent. Effects of Rectifiers on System Wave Shape..... 54
Disc. clos..... 609
Bock, J. A. Loading a Bank of Dissimilar Transformers..... 1597
Bowden, J. D.; Mackeown, Cobine. Reignition of an Arc at Low Pressures..... 1081
Bowen, A. E. Disc..... 1324
Boyajian, A. Disc..... 483, 1318, 1412
Brace, P. H. Disc..... 455
Brolly, A. H. Television by Electronic Methods..... 1153
Brooke, F. W..... 453
Brown, H. F. Disc..... 1532
Brown, Harry. Disc..... 449, 451
Brownlee, Theodore. Disc..... 481
Buchanan, W. B. Vibration Analysis—Transmission Line Conductors..... 1478
Buck, K. E. (Letter) Rocking Indirect Arc Electric Furnaces..... 1134
Buell, R. C. Disc..... 1325, 1529
Bulkley, O. R.; Andree, Kroneberg. Switching at Long Beach Plant No. 3 (Dec. 1933, p. 826)
Bullard, W. R. Disc..... 490
Bullard, W. R.; Keyes. Joint Use of Poles With 6,900-Volt Lines (Dec. 1933, p. 890)
Disc. clos..... 610
Burgwin, S. L. An A-C Potentiometer..... 108
Burr, G. A.; Hill, Watts. Portable Schering Bridge for Field Tests..... 176
Disc. clos..... 1311
Butler, J. W. Disc..... 484

C

Calabrese, Giuseppe. Disc..... 1321, 1526
Calvert, J. F. Protecting Machines From Line Surges..... 139
Disc. clos..... 608
Calvert, J. F. Disc..... 1409
Carroll, J. S.; Cozzens, Blakeslee. Corona Losses From Conductors of 1.4-Inch Diameter (Dec. 1933, p. 854)
Carson, R. W. Better Instrument Springs..... 282
Charlesworth, H. P. The Institute's Organization..... *671
Chase, P. H. Disc..... 491
Chase, D. D.; Garin. Split Winding Transformers..... 914
Disc. clos..... 1412
Chesney, C. C. Some Contributions to the Electrical Industry..... *726
Chesnut, R. W.; Mills, Affel. Auditory Perspective—Transmission Lines..... 28
Church, E. A. Disc..... 1318
Clarke, Edith. Disc..... 477
Clarke, Edith; Lorraine. Power Limits of Synchronous Machines (Nov. 1933, p. 780)
Disc. clos..... 601
Clem, J. E. Disc..... 463, 1402, 1537, 1654
Clem, J. E.; Putman. Recommended Transformer Standards..... 1594
Clement, A. W. Line Filter for Program System..... 562
Cobine, J. D.; Mackeown, Bowden. Reignition of an Arc at Low Pressures..... 1081
Cole, H. L. Disc..... 1412
Cole, H. L. Reactance and Stray Losses of Power Transformers..... 338
Compton, F. A., Jr. Energy Consumption of Multiple Unit Cars..... 280
Conrad, A. G.; Haggard. Experiments in Fatal Electric Shock..... 399
Cook, S. S. Disc..... 454
Cooper, F. W.; Austin. Two Applications of Nonlinear Circuits..... 293
Corney, C. A. Disc..... 492, 493, 1315
Corney, C. A.; Sweetnam. An Economic Study of Suburban Distribution..... 97
Cowan, F. A. Disc..... 590
Cozzens, Bradley. Disc..... 468
Cox, J. H.; Silverman. A High Power Welding Rectifier..... 1380
Cozzens, Bradley; Blakeslee, Carroll. Corona Losses From Conductors of 1.4-Inch Diameter (Dec. 1933, p. 854)
Disc. clos..... 1310
Crane, J. B. Disc..... 1651
Crary, S. B. Steady State Stability of Composite System (Nov. 1933, p. 787)
Disc. clos..... 594
Crary, S. B. Disc..... 473, 475
Crary, S. B.; March, Shildneck. Equivalent Reactance of Synchronous Machines..... 124
Disc. clos..... 605
Creagmile, W. B. Disc..... 1410
Creedy, F.; Easton, Lucas. High Velocity Streams in the Vacuum Arc..... 1454
Creedy, F.; Kogge, Danello. Machine Characteristics for Steady Welding..... 1268
Crosby, E. L. Rocking Indirect Arc Electric Furnaces..... 132

D

Dahl, G. C. Disc..... 476, 604
Dahl, O. G. C.; Fitzgerald. Equivalent Circuits in Stability Studies..... 1272
Dallye, F. R. Disc..... 1646
Dalziel, C. F. Decrement Curves for Power Systems..... 331
Danello, A. O.; Creedy, Kogge. Machine Characteristics for Steady Welding..... 1268
Dann, W. M.; Montsinger. Overloading of Power Transformers..... 1353
Darrow, K. K. Electric Discharges in Gases—II, Ions in Dense Gases..... 388
Davis, R. F. Disc..... 483
Davison, A. E. Disc..... 1539
Dawes, C. L. (Letter) Engineering Schools and the Changed Conditions..... 364
Encouraging Initiative in the Engineering Student..... 910
Disc. clos..... 1417
Electrical Characteristics of Impregnated Cable Papers..... 1235
Dawes, C. L. Disc..... 587, 1420, 1534
Dawes, C. L.; Humphries. (Letter) Cable Failure and Deterioration..... 1133
Del Mar, W. A. (Letter) A Theory Regarding Ionization in Cable Fibers..... 500
DeShazo, J. S.; Dunkle. Locating Grounds by Distribution Ratio Method..... 258
Di Toro, M. J. (Letter) A New Method of Calculating Circuits..... 229
Doble, F. C. Disc..... 618
Dow, Alex. On the Schooling of Engineers..... 1589
Dudley, A. M. Disc..... 446
Dudley, C. L. Disc..... 453
Dudley, H. W. Disc..... 462
Dunham, J. M. Disc..... 613
Dunkle, W. F.; DeShazo. Locating Grounds by Distribution Ratio Method..... 258
Dunlap, G. W.; Hegy. Corona Loss Vs. Atmospheric Conditions..... 272
Dunn, Gano. Early Headquarters of the Institute..... *685
Dushman, Saul. Electron Emission..... 1054
Low Pressure Gaseous Discharge Lamps. Parts I and II..... 1204, 1283
Dwight, H. B. A Graphical Solution of Steady State Stability..... 566
Disc. clos..... 1316
Dwight, H. B. Disc..... 484, 1319, 1646
Dyche, H. E.; Hellmund. The Pitt-Westinghouse Graduate Program..... 103
Disc. clos..... 588

E

Easton, E. C.; Lucas, Creedy. High Velocity Streams in the Vacuum Arc ... 1454
Eaton, G. O. Disc ... 494
Eaton, J. R.; North. Petersen Coil Tests on 140-Kv System ... 63
Disc. clos ... 614
Eby, Eugene D. Disc ... 478
Edgar, R. F. Silicon Steel With A-C and D-C Excitation ... 318
Edson, W. W. (Letter) Graphical Solution of Delta-Star Resistance Transformations ... 1427
Ekvall, H. N. Disc ... 465
Ellyson, D. W. Disc ... 615
Espenschied, Lloyd; Strieby. Wide Band Transmission Over Coaxial Lines ... 1371
Evans, R. D. Disc ... 473, 474, 476, 487, 608

F

Ferman, R. A. (Letter) Theory of Probability ... 1235
Ferris, L. P. Disc ... 1323
Fielder, F. D. Disc ... 1654
Fielder, F. D.; Fortescue. Counterpoise Tests at Trafford ... 1116
Fitzgerald, A. E.; Dahl. Equivalent Circuits in Stability Studies ... 1272
Fleming, A. P. M. (Letter) Early Development of the Transformer ... 364
Fletcher, Harvey. Auditory Perspective—Basic Requirements ... 9
Floyd, G. D. Disc ... 474, 1404, 1655
Foos, C. B. A Vacuum Tube Controlled Rectifier ... 568
Foote, J. H. Disc ... 471
Forbes, H. C. Disc ... 1647
Forbes, H. C.; Searing. Voltage Regulation and Load Control ... 903
Disc. clos ... 1528
Ford, F. R. Disc ... 586
Ford, F. R.; Bailey. Switching at Richmond Station ... 156
Disc. clos ... 586
Forshee, L. C. Disc ... 1323
Fortescue, C. L. Disc ... 613, 616, 624, 1403
Fortescue, C. L. G. Counterpoises for Transmission Lines (Dec. 1933, p. 908)
Disc. clos ... 599
Fortescue, C. L.; Fielder. Counterpoise Tests at Trafford ... 1116
Foust, C. M. Disc ... 1537, 1655
Foust, C. M.; Lewis. Lightning Investigation on Transmission Lines—IV ... 1180
Fox, Gordon. Electrical Practices in USSR Steel ... 1251
Frear, C. L. Disc ... 455
Freiburghouse, E. H. Disc ... 484
Frick, C. W.; Stebbins. Output Wave Shape of Controlled Rectifiers ... 1259
Fugill, A. P. Switching at the Connors Creek Plant ... 162
Disc. clos ... 586
Measurement of Noise From Power Transformers ... 1603
Fugill, A. P. Disc ... 586

G

Gardner, M. F. Operational Calculus ... 1339
Garin, A. N. Disc ... 1319
Garin, A. N.; Chase. Split Winding Transformers ... 914
Disc. clos ... 1412
Garman, G. W. Disc ... 1530
George, E. E. Disc ... 465, 466, 1413
Gerrell, G. W. Disc ... 1320
Gherardi, Bancroft. Communication—Past and Present ... *745
Gilchrest, G. I. Radio Influence Insulator Characteristics ... 899
Disc. clos ... 1539
Gilkeson, C. L. Disc ... 463
Gilkeson, C. L.; Hanks. Iron Armored Aerial Communication Cable ... 890
Disc. clos ... 1325
Gilkeson, C. L.; Jeanne. Overvoltages on Transmission Lines ... 1301
Gilt, C. M. Switching at the Hudson Avenue Station (Dec. 1933, p. 868)
Disc. clos ... 585
Gilt, C. M. Disc ... 495, 585
Goodlet, B. L. Disc ... 618
Gorman, L. J. Disc ... 1647
Greenfield, E. W.; Whitehead. Dielectric Properties of Cellulose Paper. Parts I and II ... 1389, 1498
Gross, I. W. Disc ... 618
Gross, I. W.; Sporn. Lightning Performance of 132-Kv Lines ... 1195
Gulliksen, F. H. Electronic Regulator for A-C Generators ... 877
Disc. clos ... 1531

H

Haar, Selby. Disc ... 489
Haggard, H. W.; Conrad. Experiments in Fatal Electric Shock ... 399
Haines, T. H. Disc ... 494
Hall, H. Y. Disc ... 457
Halperin, Herman; McEachron. Lightning Measured on 4-Kv Overhead Circuits ... 33
Disc. clos ... 617
Hamilton, H. S. Wide-Band Open-Wire Program System ... 550
Hanks, A. J.; Gilkeson. Iron Armored Aerial Communication Cable ... 890
Disc. clos ... 1325
Hanna, W. M. Disc ... 1647
Harder, E. L. Disc ... 608
Harding, C. F. Disc ... 465, 470, 1421, 1533
Hawley, K. A. The Suspension Insulator ... 895
Disc. clos ... 1536
Hawley, K. A. Disc ... 1536, 1537, 1538, 1539, 1540, 1541
Hazen, H. L. Disc ... 477
Healey, M. V. Cast Iron and Its Production ... 120
Heath, L. O. Disc ... 1529
Hegy, L.; Dunlap. Corona Loss Vs. Atmospheric Conditions ... 272
Hellmund, R. E. Disc ... 610, 626, 1396, 1409, 1417, 1421, 1654
Hellmund, R. E.; Dyche. The Pitt-Westinghouse Graduate Program ... 103
Disc. clos ... 588
Hellmund, R. E.; Velnott. Irregular Windings in Wound Rotor Induction Motors ... 342
Disc. clos ... 1317
Henderson, S. L. Disc ... 1409
Henry, R. T.; Johnson. Fundamentals of Design of Electric Energy Delivery Systems (Dec. 1933, p. 831)
Disc. clos ... 612
Herskind, C. C. Grid Controlled Rectifiers and Inverters ... 926
Disc. clos ... 1401
Herskind, C. C. Disc ... 488, 1398
Herts, Herman. Disc ... 469
Herzfeld, Karl F. The Present Theory of Electric Conduction ... 523
Hibben, S. G. Incandescence—Some Theoretical Aspects ... 1201
Hickernell, L. F. Disc ... 601
Hill, C. F.; Watts, Burr. Portable Schering Bridge for Field Test ... 176
Disc. clos ... 1311
Hillebrand, W. A. Disc ... 1535, 1536, 1538, 1539, 1540, 1655
Hillebrand, W. A.; Miller. Insulator Surface and Radio Effects ... 1213
Hirshfeld, C. F. Engineers of the Next Generation ... 857
Disc. clos ... 1416
Hodnette, J. K. Disc ... 616
Hodge, J. C. MacKusick, Adams. High Frequency Induction Furnaces ... 194
Hollister, F. H. Disc ... 456
Holton, J. L. (Letter) Improving A. I. E. E. Convention Sessions ... 500
Hornby, F. B. Control of Transients in Welding Generators ... 1598
Huggins, Maurice L. Structure of Atoms and Molecules, Electronic Theory of Valence ... 851
Hughes, A. L. Fundamental Laws of Photoelectricity ... 1149
Hull, A. W. Fundamental Electrical Properties of Mercury Vapor and Monatomic Gases ... 1435
Humphries, P. H.; Dawes. (Letter) Cable Failure and Deterioration ... 1133
Hunt, L. F.; Kroneberg. Some Recent Relay Developments ... 530
Hunter, E. M.; Bancker. Distance Relay Action During Oscillations ... 1073
Disc. clos ... 1322

I

Ireland, G. Disc ... 461

J

Jackson, D. C. The Evolution of Electrical Engineering Education ... *770
Jackson, D. C., Jr. Disc ... 588
Jakobsen, B. F. (Letter) Public Versus Private Enterprise ... 507
James, H. D. (Letter) Engineering Service ... 1420
Jeanne, P. A.; Gilkeson. Overvoltages on Transmission Lines ... 1301
Jewett, F. B. Research and Engineering ... *781
Johnson, J. Allen. An Insight Into the Workings of the Institute ... 1039
A Message From the President ... 1142
Another Message From the President ... 1338
Johnson, J. A.; Henry. Fundamentals of Design of Electric Energy Delivery Systems (Dec. 1933, p. 831)
Disc. clos ... 612
Johnson, J. B.; Llewellyn. Limits to Amplification ... 1449
Johnson, T., Jr. Recent Developments in Power Line Carrier ... 542
Journeaux, Didier. (Letter) A Chart for Complex Quantities ... 502
Voltage Control of Vapor Rectifiers ... 976
Disc. clos ... 1399

K

Kalb, W. C. Characteristics and Uses of the Carbon Arc ... 1173
Karapetoff, Vladimir. (Letter) Wine Makers and Bottle Makers—A Parable ... 1681
Kates, W. A. Disc ... 1533, 1538
Keep, A. O. A New High Speed Air Circuit Breaker ... 322
Kelly, M. J.; Samuel. Vacuum Tubes as High Frequency Oscillators ... 1504
Kennelly, A. E. Actions on Electric and Magnetic Units ... 402
The Work of the Institute in Standardization ... *676
Kent, H. E.; Blye. Effects of Rectifiers on System Wave Shape ... 54
Disc. clos ... 609
Kerney, Iden; Bedell. Auditory Perspective—System Adaptation ... 216
Keyes, D. H.; Bullard. Joint Use of Poles With 6,900-Volt Lines (Dec. 1933, p. 890)
Disc. clos ... 610
Kidder, A. H. Disc ... 495
Kierstead, F. H.; Bewley. Shunt Resistors for Reactors—II ... 411
Disc. clos ... 1315
Kilgore, L. A. Disc ... 487, 1648
Kingsley, Charles, Jr. Disc ... 603
Koch, C. J. Disc ... 1316
Kogge, R.; Danello, Creedy. Machine Characteristics for Steady Welding ... 1268
Kohman, G. T.; McLean. Measurement of Wetting of Dielectrics ... 255
Kouwenhoven, W. B. (Letter) A New

Method of Calculating Circuits..... 229
Kouwenhoven, W. B. Disc..... 478
Kroneberg, A. A.; Bulkley, Andree. Switching at Long Beach Plant No. 3 (Dec. 1933, p. 826)
Kroneberg, A. A.; Hunt. Some Recent Relay Developments..... 530
Kroneberg, A. A.; Macferran. Power Limits of 220-Kv Transmission Lines (Nov. 1933, p. 758)
Disc. clos..... 601

L

Lamson, J. V. Trolley Wire Lubrication Improved (Nov. 1933, p. 771)
Langstaff, H. A. P. Disc..... 467
LaPierre, C. W. Disc..... 1531
Lapp, G. W. A New Porcelain Post Insulator..... 922
Disc. clos..... 1541
Leader, C. C.; Phillips. Efficiency Tests of Induction Machines..... 1628
Lee, E. S. Membership Letters...2d cov. Jan., 2d cov. Feb., 2d cov. March, p. 510, 850, 1227, 1328, 1424, 1544, 1664
Lee, E. S. Disc..... 479
Lee, W. S. Water Power Development. *715
Levy, C. C. Electrical Equipment for Induction Furnaces..... 43
Levy, C. C. Disc..... 453
Lewis, W. W. Disc..... 474
Lewis, W. W.; Foust. Lightning Investigation on Transmission Lines—IV..... 1180
Lincoln, P. M. Some Reminiscences of Niagara..... *720
Lincoln, P. M. Disc..... 625
Lindvall, F. C. A Glow Discharge Anemometer..... 1068
Linebaugh, J. J. Disc..... 602
Linville, T. M.; Woodward. Selsyn Instruments for Position Systems.... 953
Little, T. J. Disc..... 601
Llewellyn, F. B.; Johnson. Limits to Amplification..... 1449
Lloyd, W. L., Jr. Disc..... 1655
Lorraine, R. G.; Clarke. Power Limits of Synchronous Machines (Nov. 1933, p. 780)
Disc. clos..... 601
Lovell, A. H. Electric Power Switching. 147
Lubkin, Samuel. (Letter) Applications of Nonlinear Circuits..... 502
Lucas, F. B.; Creedy, Easton. High Velocity Streams in the Vacuum Arc..... 1454
Ludwig, L. R. Disc.....1399, 1400
Ludwig, L. R.; Maxfield, Toepfer. An Experimental "Ignitron" Rectifier..... 75
Disc. clos..... 602
Ludwig, L. R.; Wagner. The "Ignitron" Inverter..... 1384
Lunas, L. J. Disc..... 1661
Lunas, L. J.; Bernarde. A Telemeter With Pilot Coil Transmitter..... 974
Disc. clos..... 1661
Lusignan, J. R., Jr. Disc..... 1656
Lusignan, J. T., Jr.; Rorden. A New Laboratory for High Voltage Testing..... 1255
Lusignan, J. T., Jr.; Smith. High Voltage Insulators..... 969
Disc. clos..... 1536
Luther, Benjamin. Protective Relays on Pennsylvania Locomotives..... 261
Luts, S. G. (Letter) Limiting Reactances of 2-Terminal Reactance Arms..... 634

M

MacCarthy, D. D. Disc..... 465
Macferran, Mabel; Kroneberg. Power Limits of 220-Kv Transmission Lines (Nov. 1933, p. 758)
Disc. clos..... 601
MacGahan, Paul. Disc..... 1660
Mackeown, S. S.; Bowden, Cobine. Reignition of an Arc at Low Pressures.. 1081
MacKusick, M. H.; Adams, Hodge. High Frequency Induction Furnaces..... 194
Mailey, R. D. Vapor Conducting Light Sources..... 1447
March, L. A.; Shildneck, Crary. Equivalent Reactance of Synchronous Machines..... 124
Disc. clos..... 605
Mason, R. C. (Letter) Reignition of an Arc at Low Pressures..... 1679
Mason, R. C.; Siepian. Electric Discharges in Gases—III, Self-Maintained Discharges..... 511
Mathes, R. C.; Wright. The "Compandor"—An Aid Against Radio Static..... 860
Maurer, K. L. Disc.....450, 1323, 1324
Maxfield, F. A.; Toepfer, Ludwig. An Experimental "Ignitron" Rectifier..... 75
Disc. clos..... 602
Maxstadt, F. W. Insulator Arcover in Air..... 1062
McAuley, P. H. Disc..... 622
McClellan, William. The Engineer a Creator of Leisure..... *777
McEachron, K. B. Multiple Lightning Strokes..... 1633
McEachron, K. B. Disc.....1404, 1537, 1656
McEachron, K. B.; Halperin. Lightning Measured on 4-Kv Overhead Circuits..... 33
Disc. clos..... 617
McGill, C. W. Disc..... 1315
McKearin, J. P. Disc..... 598
McLean, D. A.; Kohman. Measurement of Wetting of Dielectrics..... 255
McMains, T. F. (Letter) Engineering Education Should Train 2 Types of Engineers..... 1678
McMillan, F. O. Disc..... 1657
McNicol, Donald. Telegraph Men Founders of the A.I.E.E..... *675
Meador, J. R. Calibration of the Sphere Gap..... 942
Disc. clos..... 1659
Mees, C. E. Kenneth. Scientific Thought and Social Reconstruction. 381
Merrill, F. W. Inductor Alternators for Signaling Purposes..... 78
Meyer, E. B. The Story of the Institute Budget..... 375
Miller, A. R. Transient Voltages in Welding Generators..... 1296
Miller, A. R. Disc..... 471
Miller, C. J., Jr.; Hillebrand Insulator Surface and Radio Effects..... 1213
Miller, H. P., Jr. Disc..... 469
Mills, R. H.; Affel, Chesnut. Auditory Perspective—Transmission Lines.... 28
Mini, J., Jr.; Wright. Field Tests on Conductor Vibration..... 1123
Mittag, A. H.; Alexanderson. The "Thyratron" Motor..... 1517
Monteith, A. C. Disc..... 488
Montsinger, V. M. Disc..... 1405
Montsinger, V. M.; Dann. Overloading of Power Transformers..... 1353
Moore, H. R. Iron Shielding for Telephone Cables..... 274
Disc. clos..... 1324
Moore, W. E. Disc.....590, 591, 593
Morgan, T. H.; Narbutovskih. Stray Load Loss Test on Induction Machines..... 286
Disc. clos..... 1318
Morrow, L. W. W. Industry Demands and Engineering Education..... 518
Disc. clos..... 1422
Morton, W. B.; Bacon, Unland. A 7,000-Ampere Station Bus..... 994
Disc. clos..... 1650
Moser, F. L. Disc..... 480
Mulford, V. A.; Sporn, Peterson. Selection and Performance of Suspension Insulators..... 936
Disc. clos..... 1538

N

Naeter, A. (Letter) Graduate Engineering Study Remote From Industrial Centers..... 501
Narbutovskih, P. M. Power Losses in Induction Machines..... 1466
Narbutovskih, P. M. Disc..... 1318
Narbutovskih, P. M.; Morgan. Stray Load Loss Test on Induction Machines..... 286
Disc. clos..... 1318
Negley, S. R. Disc..... 1314
Neher, J. H. Disc..... 466
Nichols, L. C. Effect of Overloads on Transformer Life..... 1616
Norman, H. M. Induction Motor Locked Saturation Curves..... 536
North, J. R.; Eaton. Petersen Coil Tests on 140-Kv System..... 63
Disc. clos..... 614
Nowacki, L. M. Induction Motors as Selsyn Drives (Dec. 1933, p. 848)
Nyquist, Harry. Disc..... 1311

O

Oesterreich, E. W. Disc.....491, 611
Olmsted, L. M. Disc..... 453
Oplinger, K. A. A Unique Oscillograph. 290
Ostrander, J. K. Disc..... 458

P

Palmer, H. G.; Rhodes, Roach. (Letter) Appreciation of the "Science Series."..... 1031
Papst, H. W. Disc..... 1649
Park, R. H. Disc..... 604
Parsons, J. S. Disc..... 490
Peck, C. E. Heat Flow in Turbine Generator Rotors..... 1359
Peterson, E. L.; Mulford, Sporn. Selection and Performance of Suspension Insulators..... 936
Disc. clos..... 1538
Peterson, T. F. Disc..... 600
Peterson, W. S. Power Limit of a Transmission System (Aug. 1933, p. 569)
Disc. clos..... 602
Phillips, F. D.; Leader. Efficiency Tests of Induction Machines..... 1628
Pickens, B. M. Pantograph Trolleys—II, Operating Features..... 190
Pidgeon, H. A. Theory of Multielectrode Tubes..... 1485
Pike, O. W.; Ulrey. Ratings of Industrial Electronic Tubes..... 1577
Pleasants, Gibson. Electrical Figures on Plates in Air..... 300
Poritsky, H. Disc..... 592
Post, G. G. Port Washington Power Plant Design..... 264
Powell, G. A. Disc..... 1320
Price-Hughes, H. A. (Letter) History of Thomson-Houston Company Name..... 1133
Pupin, M. I. The Equation of Electrical Propagation..... *691
Putman, H. V. Disc..... 1405
Putman, H. V.; Clem. Recommended Transformer Standards..... 1594

R

Rah, J. C. Disc..... 1541
Randall, K. C. Disc..... 458
Reagan, M. E. Some New Developments in Supervisory Control..... 949
Reagan, M. E. Disc.....1529, 1661
Reed, K. A. Disc..... 1408
Reiter, Reuben. Disc..... 1534
Rhoads, A. E. (Letter) Rocking Indirect Arc Electric Furnaces..... 1134
Rhodes, D.; Roach, Palmer. (Letter) Appreciation of the "Science Series."..... 1031
Rice, E. W., Jr. A Century of Progress

in 50 Years..... *689
Roach, C. L.; Palmer, Rhodes. (Letter) Appreciation of the "Science Series."..... 1031
Roberts, E. B. Disc..... 446
Robertson, B. L.; Rogers. External Impedance Vs. Short-Circuit Currents..... 252
Robinson, L. N. Disc..... 1658
Rogers, T. A.; Robertson. External Impedance Vs. Short-Circuit Currents..... 252
Roman, W. G. Disc..... 622
Rorden, H. L.; Lusignan. New Laboratory for High Voltage Testing, A.. 1255
Rutan, E. J. Disc.....1411, 1421, 1529
Ryan, H. J. Developments in Electric Power Transmission..... *712
Ryan, W. D'Arcy. Lighting "A Century of Progress."..... *731
Rylander, J. L. Disc..... 1411

S

Salter, E. H.; Shanklin, Wiseman. Resistance and Reactance of 3-Conductor Cables..... 1581
Samuel, A. L.; Kelly. Vacuum Tubes as High Frequency Oscillators.... 1504
Sanderson, C. H. Disc..... 459
Sanford, F. E. Disc..... 469
Schaake, W. Pantograph Trolleys I—Design Features..... 182
Disc. clos..... 589
Schelkunoff, S. A. Coaxial Communication Transmission Lines..... 1592
Schell, L. S.; Stephens. Transformers for Electric Furnaces (Dec. 1933, p. 822)
Schnyder, A. P. Disc..... 463
Schurig, O. R. Disc..... 1649
Schwager, A. C. The Expulsion Oil Circuit Breaker..... 1108
Scott, C. F. The Institute's First Half Century..... *645
Scott, J. A. Effect of Oil Pressure on Insulation Strength..... 308
Scriven, E. O. Auditory Perspective—Amplifiers..... 25
Seaman, E. F. (Letter) Slide Rule Calculation of Unbalanced 3-Phase Currents.....365, 1031
Searing, H. R.; Forbes. Voltage Regulation and Load Control..... 903
Disc. clos..... 1528
Seeley, H. T. A Compensated Automatic Synchronizer..... 960
Disc. clos..... 1528
Seeley, H. T. Disc..... 1530
Seeley, W. J. (Letter) Engineering Education for Non-Engineers..... 1328
Seletsky, A. C. Cross Potential of a 4-Arm Network (Dec. 1933, p. 861)
Seletsky, A. C.; Anderson. Cross Current of a 5-Arm Network..... 1004
Disc. clos..... 1660
Shanklin, G. B.; Wiseman, Salter. Resistance and Reactance of 3-Conductor Cables..... 1581
Sharp, C. H. (Letter) Designations of Photo-Electric Devices..... 1682
Shelton, E. K. Disc..... 608
Shildneck, L. P.; Crary, March. Equivalent Reactance of Synchronous Machines..... 124
Disc. clos..... 605
Shuler, William. Disc..... 611
Sidler, P. R. Disc..... 463
Sills, H. R. (Letter) Jogging the Rotor of an Alternator Electrically..... 363
Silverman, Daniel; Cox. A High Power Welding Rectifiers..... 1380
Sinclair, C. T. Disc..... 489
Skinner, C. E. The Institute and Industrial Standardisation..... *681
Slepian, Joseph. Disc..... 472
Slepian, J.; Mason. Electric Discharges in Gases—III, Self-Maintained Discharges..... 511
Slinger, R. N. Disc..... 607
Smith, B. H. A New Demand Meter.... 94
Disc. clos..... 626
Smith, J. J. Disc..... 483
Smith, S. A., Jr. (Letter) Theory of Probability..... 229
Smith, T. H.; Steinberg. The Theory of Incremental Rates and Their Practical Application to Load Division. Parts I and II.....432, 571
Smith, V. G. (Letter) Slide Rule Calculation of $\sqrt{a^2 + b^2}$..... 228
Smith, W. A.; Lusignan. High Voltage Insulators..... 969
Disc. clos..... 1536
Snow, W. B.; Steinberg. Auditory Perspective—Physical Factors..... 12
Sohon, Harry. (Letter) Excitation and Ionization in Gases..... 1235
Sorensen, R. W. The Insulator String.. 1221
Sorensen, R. W. Disc...1414, 1532, 1537, 1541
Spencer, H. H. Disc.....461, 480
Spooner, Thomas. Characteristics of a Group of Engineers..... 1571
Sporn, Philip. Disc.....459, 620, 1531
Sporn, Philip; Gross. Lightning Performance of 132-Kv Lines..... 1195
Sporn, Philip; Peterson, Mulford. Selection and Performance of Suspension Insulators..... 936
Disc. clos..... 1538
Sprague, F. J. Digging in "The Mines of the Motors."..... *695
Stansel, N. R. Disc..... 452
Starr, F. M. Theory of Primary Networks. Parts I and II.....310, 426
A New Method of Ground Fault Protection..... 1472
Starr, F. M. Disc.....492, 1525
Stebbins, F. O. Disc.....1397, 1400
Stebbins, F. O.; Frick. Output Wave Shape of Controlled Rectifiers..... 1259
Stein, I. M. Disc.....624, 1660
Steinberg, J. C.; Snow. Auditory Perspective—Physical Factors..... 12
Steinberg, M. J.; Smith. The Theory of Incremental Rates and Their Practical Application to Load Division. Parts I and II.....432, 571
Stephens, H. O. Transformer Reactance and Losses With Nonuniform Windings..... 346
Disc. clos..... 1319
Stephens, H. O.; Schell. Transformers for Electric Furnaces (Dec. 1933, p. 822)
Stewart, H. R. Disc..... 1321
Stewart, P. B. Disc..... 469
Stillwell, L. B. Alternating Current Versus Direct Current..... *708
Stinchfield, J. M. Cathode Ray Tubes and Their Application..... 1608
Stoddard, R. N. A New Timer for Resistance Welding..... 1366
Storer, N. W. Diesel Electric Rail Cars and Locomotives..... 1461
Strieby, M. E.; Espenschied. Wide Band Transmission Over Coaxial Lines..... 1371
Sunde, E. D. Disc..... 450
Sweetnam, A. H. Disc..... 1525
Sweetnam, A. H.; Corney. An Economic Study of Suburban Distribution..... 97

T

Taylor, C. W. Disc..... 460
Teague, W. L. Disc..... 1653
Teague, W. L.; Bellaschi. Impulse and 60-Cycle Strength of Air..... 1638
Terman, F. E. Resonant Lines in Radio Circuits..... 1046
Thomas, Benjamin, Jr. Energy Consumption on Street Railways..... 326
Thomason, J. L. Impulse Generator Circuit Formulas..... 169
Thomason, J. L. Disc..... 482
Thomson, Elihu. Some High Lights of Electrical History..... *758
Thuras, A. L.; Wente. Auditory Perspective—Loud Speakers and Microphones..... 17
Timbie, W. H. Disc.....447, 1415
Toepfer, A. H.; Ludwig, Maxfield. An Experimental "Ignitron" Rectifier. 75
Disc. clos..... 602
Tonks, Lewi. Electric Discharges in Gases, Ionization, and Excitation.. 293
Treat, Robert. Disc..... 614
Trickey, P. H. Disc..... 1312
Trueblood, H. M.; Wascheck. Investigation of Rail Impedances (Dec. 1933, p. 898)
Disc. clos..... 589
Tucker, Carlton E. (Letter) Information on Oliver Heaviside..... 1554

U

Ulrey, Dayton; Pike. Ratings of Industrial Electronic Tubes..... 1577
Unland, H. L.; Morton, Bacon. A 7,000-Ampere Station Bus..... 994
Disc. clos..... 1650

V

Van Niekerk, A. Analytical Representation of a Magnetizing Curve..... 1186
Veinott, C. G. Measurement of Noise From Small Motors..... 1624
Veinott, C. G.; Hellmund. Irregular Windings in Wound Rotor Induction Motors..... 342
Disc. clos..... 1317
Vogel, F. J. Disc..... 1658
Vogel, F. J.; Bellaschi. Factors Influencing the Insulation Coördination of Transformers—II..... 870
Disc., clos..... 1406
Vosburgh, F. J. Electrodes-Carbon and Graphite (Dec. 1933, p. 844)

W

Wade, P. E. Disc.....1313, 1314
Wagner, C. F. Transients in Magnetic Systems..... 418
Wagner, C. F.; Ludwig. The "Ignitron" Inverter..... 1384
Wagner, H. H. Disc..... 1319
Wagner, T. B. A Thermionic-Tube Measuring Instrument..... 1621
Wagner, T. B.; Albert. Simplified Measurements of Sound Absorption. 1160
Walker, E. A. (Letter) Arcover Caused by Absorption Current..... 1680
Wallace, H. A. Social Aspects of the Engineering Approach..... 395
Wallau, H. L. Disc..... 460
Walter, O. W. (Letter) Overcompounded D-C Generators in Parallel Without Equaliser..... 1553
Warrington, A. R. van C. Control of Distance Relay Potential Connections..... 206
Disc. clos..... 617
Wascheck, George; Trueblood. Investigation of Rail Impedances (Dec. 1933, p. 898)
Disc. clos..... 589
Waterman, A. T. Fundamental Properties of the Electron..... 3
Watts, T. R.; Burr, Hill. Portable Schering Bridge for Field Tests.... 176
Disc. clos..... 1311
Weber, Ernst. Mapping of Fields..... 1563
Welch, A. U. Disc..... 463
Wente, E. C.; Thuras. Auditory Perspective—Loud Speakers and Microphones..... 17
Whipple, C. C. Disc..... 448
White, T. C. Switching at State Line Station..... 148
Disc. clos..... 1312
Whitehead, J. B. The Life of Impregnated Paper..... 244
The Fiftieth Anniversary of the A.I.E.E..... *643

The Institute on Its 50th Anniversary. 1143
Whitehead, J. B.; Greenfield. Dielectric Properties of Cellulose Paper. Parts I and II....1389, 1498
Wickenden, W. E. Toward the Making of a Profession.... 1146
Widerōe, Rolf. "Thyratron" Tubes in Relay Practice.... 1347
Wieseman, R. W. Insulation Resistance of Armature Windings.... 1010
Disc. clos.... 1524
Winkler, E. W. (Letter) A New Stroboscope to Study Hunting of a Synchronous Motor.... 1678
Wiseman, R. J.; Salter, Shanklin. Resistance and Reactance of 3-Conductor Cables.... 1581
Withington, Sidney. Disc.... 1531
Wolf, H. B. Disc.... 480
Woods, F. L.; Blume. Simultaneous Control of Voltage and Power Factor (Dec. 1933, p. 884)
Woodward, J. S.; Linville. Selsyn Instruments for Position Systems.... 953
Wright, A. M. Disc.... 1313
Wright, E. M.; Mini. Field Tests on Conductor Vibration.... 1123
Wright, S. B.; Mathes. The "Compandor"—An Aid Against Radio Static.... 860
Wulfing, H. E. Radial Versus Primary Network Distribution.... 38

y

Young, W. M. Disc.... 587

Z

Zogbaum, F. Load Totalizing in the New York Area.... 886
Disc. clos.... 1529
Zubair, S. M. Disc.... 474

Division III—News of A.I.E.E. Activities

Addresses Wanted....235, 370, 506, 639, 848, 1035, 1139, 1242, 1331, 1431, 1559, 1687

B

Board, Urges That Activities of U. S. Bureau of Standards Be Maintained, A.I.E.E.... 357
Board of Directors, Report of the....1095
Branch Activities Summarized in Annual Report for 1933–34, Section and....1027
Branch Meetings. (See Meetings, Branch)
Branch, Pennsylvania State College, Electronic Show Conducted by Students.. 632
Branches of the Institute (Officers 1934–5).1335
Budget for 1934–35, The Institute....1542
Budget, The Story of the Institute. Meyer 375

C

(Committee) Annual Reports to Be Made Available....1022
Committee Reports Postponed, Technical 1129
Committees, National....1332, 1543

D

Directors' Meetings. (See Meetings, Directors)
District Meetings. (See Meetings, District)
Districts, Technical Committee Activities Proposed for Sections and.... 631

NOTE—An asterisk (*) before a page number denotes publication of individual's picture on that page.

E

Edison Medal for 1933 Presented to Doctor Kennelly....*353

F

Fiftieth Anniversary

(See Also Under "Technical Subject Index")
Badge, Origin and Adoption of the Institute's.... 838
Branches of the Institute, Sections and.. 835
Branches to Celebrate the Institute's 50th Anniversary in May, Many Sections and.... 496
Celebration of 50th Anniversary....1227
"Century of Progress" (Photos).... 737
Charter Members, Formation of the Institute and the Enrolling of Its 787, 822, 824
Cloth Bound Copies of 50th Anniversary Issue....1023
Committees, Chairmen of the Institute's 828
Committees, Chart of Institute.... 827
Communication Equipment, Some Contrasts in. (Photos).....748, 752
(Communication) Some Contrasts in Radio Equipment.... 784
Engineering Foundation, The.... 837
Formation of the Institute and the Enrolling of Its Charter Members.... ....787, 822, 824
Generating Stations, Some Steam-Electric. (Photos).... 754
Generators of Various Periods. (Photos) 756
Gilberd, Dr. Wm., Shewing His Experiments on Electricity to Queen Elizabeth and Her Court. (Photo of painting).... 644
Group of Those Attending the 15th Annual Meeting, Boston, Mass., 1899. (Photo).... 690
Groups on Which the Institute Is Represented. (Chart).... 826
Hoboken Station of the Hudson Electric Light Company in 1897, Interior of the.... 767
Honorary Members and Medalists, Other Than Those Who Served Terms as Presidents.... 811
Hydroelectric Power Stations and Equipment, Some. (Photos).... 716
(Illumination) Some Early Forms of Electric Lamps. (Photos).... 730
Institute on Its 50th Anniversary, The. Whitehead....1143
Instruments, Early Electrical. (Photos) 769
International Engineering Congresses... 836
Library, Engineering Societies.... 837
Medalists and Honorary Members, Other Than Those Who Served Terms as Presidents.... 811
Members, Among Long-Standing..... 825
Members in 1897, A Group of Prominent Institute. (Photo).... 684
Motors, Typical Electrical. (Photos).. 768
Names Behind the Institute; Presidents, Honorary Members, Medalists, Secretaries, Treasurers, Charter Members.... 786
Officers of the Institute, Past and Present.... 834
Past-President's Luncheon, Swampscott, Mass., June 28, 1923, Group in Attendance at. (Photo).... 674
Past-Presidents in Attendance at the Chicago Convention, June 29, 1911, Group of. (Photo).... 773
Plans Progressing for Institute's Fiftieth Anniversary Celebration in May..... 358
Queen Elizabeth and Her Court, Dr. Wm. Gilberd Shewing His Experiments on Electricity to. (Photo of painting).... 644
Radio Equipment, Some Contrasts In. (Photos).... 784
Secretaries, The Institute's National.... 820
Sections and Branches of the Institute.. 835
Sections and Branches to Celebrate the Institute's 50th Anniversary in May, Many.... 496
Sections, Chairmen of the Institute's.... 831
Significant Electrical Developments.... 840
Standardization, The A.I.E.E. in..... 837
Switchboards, Some Contrasts in Power System. (Photos).... 839
Switchgear, Some High Lights in the Evolution of. (Photos).... 780
Thermionic Tube, the Family Tree of the. (Illustration).... 753
Transformers From Which Modern Power Systems Grew, Some of the. (Photos).... 779
Transmission Structures, Some. (Photos).... 711
Transportation, A Few High Lights in Electrical. (Photos).... 707
Treasurers, The Institute's National.... 821
Women Members of the A.I.E.E., List of 835

G

General Power Applications Committee Appointed....1543

I

Industrial Power Applications, An Appeal for Papers on.... 358

K

Kennelly, Doctor, Edison Medal for 1933 Presented to....*353

L

Lamme Medal. (See Medals, Lamme)
Lee, William States, In Memoriam.....1131

M

Medal, Edison, for 1933 Presented to Doctor Kennelly....*353
Medal, John Fritz for 1935, Awarded Late F. J. Sprague....1664
Medals, Lamme
Nomination (1934) Due Nov. 1...1022, 1229
Awarded (1933) to L. B. Stillwell.... 1226

MEETINGS, DIRECTORS:

Executive Committee, New York, December 8, 1933.... 222
New York, January 2, 1934.... 356
Executive Committee, New York, March 9, 1934.... 630
New York, May 25, 1934.... 1129
Hot Springs, Va., June 27, 1934..... 1229
New York, August 7, 1934.... 1326
New York, October 10, 1934..... 1544

MEETINGS, DISTRICT:

Middle Eastern District Executive Committee Meets.... 1664
North Central District, Student Conference Held By.... 1132
Executive Committee Meets..... 1664
Southern District Holds Student Conference.... 631
Student Convention at M.I.T. Successful.... 356
Worcester, May 1933.
North Eastern District May 16–18.... 496
To Meet at Worcester.... 627
To Hold Student Convention..... 629
District Meeting, May 16–18..... 844
Holds Tenth Annual Meeting..... 1023

MEETINGS, NATIONAL:

Pacific Coast Convention 1934.
Dates Selected.... 630
Plans Being Made.... 1022
(Temple of Osiris) May Be Visited. (Photo.).... 1127
Plan Your Vacation to Include the.... 1128
Headquarters.... 1225
Last Call for the.... 1229
Upholds Coast Reputation..... 1423
Group Photo.... 1425

Summer Convention 1934.
Tentative Plans Are Announced..... 630
50th Annual Summer Convention..... 842
To Be Held This Month at Hot Springs, Va..... 1022
Few of Virginia's Many Natural Attractions Near Hot Springs, A. (Photos)..... 1025
To Be Reported in Next Issue..... 1129
Held at Hot Springs, Va..... 1224
Officers, Delegates, and Members Hold Annual Conference at Hot Springs, Va..... 1230
Presidential Group at Hot Springs, Va., June 25–29..... 1232
Winter Convention 1934.
Program Provides Attractive Technical and Social Activities..... 220
May Be Visited. (Photos)..... 225
Marked by Good Attendance..... 350
Demonstration of Music in Auditory Perspective..... 357
Reports of Committee Meetings Held. 498
Winter Convention 1935.
Institute's 1935 Winter Convention, The..... 1543
Technical Program Announced..... 1662
International Music Hall, Radio City, New York. (Photo)..... 1663
Control Board of Radio City Music Hall Stage. (Photo)..... 1669
Membership Letter. Lee. 2d cov. Jan., 2d cov. Feb., 2d cov. March, p. 510, 850, 1227, 1328, 1424, 1544, 1664
Membership, Transfers and Elections.. 234, 370, 505, 637, 848, 1034, 1138, ...1242, 1331, 1430, 1558, 1686
Members Planning Trips Abroad, To Institute..... 630

N

(New York Section) What Place the Engineer in the Changing Economic Scene? (Jordan, Chevalier)..... 1546
"Human Engineering Problems," An Address on. (M. I. Pupin)..... 1131

O

Officers and Committees (1934–35).
Branches..... 1335
District..... 1335
National.....1332, 1543
Sections..... 1334
Officers Newly Elected for the Year 1934–35, The Institute's National.. 1038
(Officers) Nominating Committee Announces (1934) Candidates..... 222
Officers, Nomination of 1935 A.I.E.E... .....1425, 1544

P

Pittsfield Section Former Chairman Dies..... 1551
President, Messages From J. Allen Johnson.
An Insight Into the Workings of the Institute..... 1039
A Message From..... 1142
Another Message From..... 1338
Prize Awards Announced for 1933 Papers, Institute..... 1026
Additional Awards for 1933.....1234, 1327
Prizes for Technical Papers, Announcement of (1934)..... 1665
Professional Engineers' Committee on Unemployment.
Engineers Urged to Greater Activity in Local Affairs..... 223

R

Ryan, Harris J. (In Memoriam).....*1327

S

San Francisco Section Stimulates Student Participation..... 227
Science Series for Engineers, A..... 238
Reprints May Be Made Available.... 1545
Will Be Reprinted..... 1665
Section and Branch Activities Summarized in Annual Report for 1933–34..... 1027
Sections and Districts, Technical Committee Activities Proposed for..... 631
Sections (Officers 1934–35)..... 1334
Sprague, Frank J., Awarded John Fritz Medal for 1935..... 1664
Sprague, Frank J., (Bust) Presentation, Principal Addresses Given in Connection With..... *351
Standards.
Capacitors, Standards for..... 1135
Constant Current Transformers..... 366
Electrical Installations on Shipboard.. 1135
Electrical Insulating Materials..... 1676
Electrical Measurements, Standard Methods for..... 366
Electronics Field, Report on Definitions in..... 1135
Graphical Symbols Used for Electric Power and Wiring..... 366
Graphical Symbols Used for Electric Traction..... 366
Graphical Symbols Used in Radio.... 366
Mercury Arc Rectifiers..... 1135
Polyphase Induction Machines..... 1677
Rotating Electrical Machinery, Report on..... 366
Transformers..... 1677
Welding Standards, Two..... 366
Standards Be Maintained, A.I.E.E. Board Urges That Activities of U.S. Bureau of..... 357

T

Technical Committee Activities Proposed for Sections and Districts.... 631
(Technical Committee) Annual Reports to Be Made Available..... 1022
Technical Committee Reports Postponed..... 1129
Townley, Calvert, In Memoriam..... *223

y

Yearbook Now Available, 1934..... 497

Division IV—News of Non-Institute Activities

Air Conditioner Association, Unit..... 1676
Air Conditioning Analyzed, Home Study Course in..... 634
American Association for the Advancement of Science
Annual Science Exhibition..... 1327
American Engineering Council
Census of Engineers..... 1677
Engineering Affairs at Washington.... 1136
Feiker, F. M., Appointed Executive Secretary..... 367
"Following the Flags" at Washington. (Photo)..... 1030
"Integration" of National Activities.. 1677
Its Relation to the Institute..... 1666
Legislation and Administrative Policy Affecting Engineers..... 1029
Mapping and Surveying the United States..... 1031
Officers Elected at Annual Meeting... 367
Prominent Engineers Named on Federal Aviation Commission..... 1426
Representative on Employment at Washington..... 1677
Salaries for Engineers..... 1031
Secretaries of Engineering Societies Visit Washington..... 1136
Unemployment Among Engineers..... 1677
Wallace, L. W., Leaves..... 367
American Institute of Mining and Metallurgical Engineers
To Meet..... 362
American Physical Society
To Meet in New York..... 362
Meetings..... 1026
Annual Meeting..... 1674
American Society for Testing Materials
To Meet in Washington..... 362
To Hold Meeting in June..... 1026
President Dies..... 1326
Reports on Electrical Research Activities..... 1669
Outdoor Weathering of Metals and Coatings..... 1674
American Society of Civil Engineers
Officers for 1935 Nominated..... 1674
American Society of Mechanical Engineers
Semiannual Meeting..... 497
To Hold Semiannual Meeting..... 1026
Annual Meeting..... 1425
Elects Officers..... 1551
Journal of Applied Mechanics..... 1663
American Standards Association
Letter Symbols Under Revision, Standard..... 1135
Limit of Observable Temperature Rise..... 1676
Membership Increase Reported..... 1426
Noise Measurement Standards Developed..... 1135
Power Switchgear..... 1135
Radio Standardization Sponsorship To Reside Solely in I.R.E..... 1676
American Transit Association to Meet... 1131
Applied Mechanics Journal to Be Published..... 1663
Arch Dam Report, Second Volume on... 1426
Armstrong, Major, Appointed Professor at Columbia University..... 1327
Aviation Commission, Prominent Engineers Named on Federal..... 1426
(Aviation) Flying 60 Tons of Machinery Into the Peruvian Andes. (Photo). 584
(Aviation) Modern Transportation's Most Recent Contribution to Speed and Safety..... 849

B

Barker, George Huntington, Pioneer in Electrical Development Dies..... 1027
Bassett, William Hastings, President of A.S.T.M. Dies..... 1326
Bell Telephone System Centralizes Its Researches..... 847
(Board, Samuel S.) "Finding Work".... 1670
Boiler of New Design, A Steam..... 362
(Bolivian Power Company) Repairing a Conductor Carrying 38,000 Volts.... 1426
Boulder Dam
Generators Being Assembled. (Photo) 499, 1551
Power Transformers..... 1132
Throat Liners for Penstocks of the. (Photo)..... 1325
Visited by San Francisco Engineers.. *359

C

Chamber of Commerce, Engineers Active at Meeting of U. S..... 1136
Chemistry Industry Medal Awarded to J. G. Vail..... 227
Chemists' Medal to Be Presented to Doctor Conant..... 1025
(Chevalier, Col. W. T.) "What Place the Engineer in the Changing Economic Scene?"..... 1549
(Clark, Dr. Walton) Former President of Franklin Institute Dies..... 1551
Code for Engineering Division of Construction Industry, Doctor Whitehead Explains Proposed..... 1234
Columbia University Offers E.E. Scholarships..... 358
Conference Groups in Business Planned. 1553

E

Edison Monument Erected in Japan. (Photo)..... 1545

(Electric Railway Presidents' Conference Committee) A "Million Dollar Car." 1666
Electrical Equipment Orders Placed, Large. 497
Electronic Show Conducted by Students. 632
Electronic Tubes in Industry, How to Use. 1675
Engineer in the Changing Economic Scene? What Place the (Jordan, Chevalier). 1546
Engineering Foundation
Annual Report Issued. 633
Election Held. 632
Engineers Active at Meeting of U. S. Chamber of Commerce. 1136
Outline of Joint Engineering Organizations. 632
Pays Tribute to Founder Swasey. 1552
Personnel Research Foundation. 1136
Second Volume on Arch Dam Report. 1426
Valuable Books in Engineering Societies Library. 367
Engineers' Council for Professional Development
Committee on Professional Recognition Commented Upon by C. N. Lauer and Dean Barker. 224
Engineers Urged to Greater Activity in Local Affairs. 223

F

Finding Work. (By S. S. Board). 1670
Ford to Install Second 110,000-Kw Generator. 1326
Fort Peck Dam, Work Begins on. 1132
Franklin Institute Former President Dies. 1551
Fraud, A Warning Against. 1024

G

Generator, Building the Most Powerful Single-Shaft. (Photo). 1031
Great Britain's First Streamlined Rail Car. 226
Grunsky, Carl Ewald, Prominent Consulting Engineer Dies. 1234
Guggenheim Medal Awarded to Boeing. 1027

H

Harvard, Engineering Education to Be Reorganized at. 1675
Hetch Hetchy Builder Dead, M. M. O'Shaughnessy. 1545
Historical Information on Engineering Drawing Requested. 361
Hoover Dam. (See Boulder Dam)

I

Illuminating Engineering Society Meeting 1131
Illumination, Annual Meeting of U. S. Committee on. 360
(Illumination) Glareless Lights for St. Paul Airport. (Photo). 497
(Illumination) Lighting Control, Metropolitan Opera Installs. 1675
Illumination, Novel Use of Electrical. 360
Industrial Notes. 236, 372, 508, 640, 1036, 1140, 1244, 1336, 1432, 1560
Institute of Radio Engineers
Officers Elected. 361
To Meet at Rochester. 1426
International Commission on Illumination
Annual Meeting of U. S. Committee on Illumination. 360
International Congress for Applied Mechanics to Be Held. 361
International Music Hall, Radio City, New York, N. Y. (Photo). 1663

J

(Jehl, Francis) France Honors Early Menlo Park Worker. 1675
(Jordan, Dr. Virgil) "What Place the Engineer in the Changing Economic Scene?" 1546

L

Library Available, Services of Engineering Societies. 1668
Lightning Storms in Northwest Studied. 1676
Literature, Engineering 235, 371, 507, 639, 1035, 1139, 1242, 1331, 1431, 1559, 1687
Loudspeaker, A 500-Watt. 1676

M

Medal Awarded to Boeing, Guggenheim. 1027
Medal to Be Presented Doctor Conant, Chemists'. 1025
Menlo Park Worker, France Honors Early. 1675
Metropolitan Opera Installs Lighting Control. 1675
Middleton, W. Irving, Former Chairman of Boston Section Dies. 1327
(M.I.T.) Exchange of Professors Being Arranged. 362
M.I.T., Five-Year Course Added at. 1132
Montefiore Prize Award Now Open, Triennial. 1026

N

National Screw Thread Commission Available, Report of. 362

O

O'Shaughnessy, M. M., Hetch Hetchy Builder Dead. 1545

P

Pennsylvania Railroad Orders 57 Locomotives. 1675
(Personnel Research Federation) Conference Groups in Business Planned. 1553
(Phila. Elec. Co.) Building the Most Powerful Single-Shaft Generator. (Photo). 1031
"Porphyry Coppers," Development of Mines and Men Traced in. 227
Power and Mechanical Engineering, Exposition of. 1551
Psychrometric Charts. 362
Public Works Expenditures, Referendum on. 1136
(Pupin, Dr. M. I.) "Human Engineering Problems," An Address on. 1131

R

Radio City Music Hall Stage, Control Board of. 1669
Radio Communication, Domestic Short Wave. 362
Reading List for Junior Engineers, A. 1667
Refrigerating Machinery Association Meeting. 1426
Research Projects, Suggestions for. 1545

S

(Safe Harbor) Large Electrical Equipment Orders Placed. 497
"Science Makes More Jobs" the Topic of an Interesting Meeting. 845
Slide Rule Mangifier, New. (Photo). 498
Society for the Promotion of Engineering Education
Historical Information on Engineering Drawing Requested. 361
Standards Be Maintained, A.I.E.E. Board Urges That Activities of U. S. Bureau of. 357
Standards Reports Electrical Work, Bureau of. 361
Society of Naval Architects and Marine Engineers To Meet. 1551
Swasey, Engineering Foundation Pays Tribute to. 1552

T

T.V.A. Orders Gas-Electric Locomotives. 1667
Traction, Primary Considerations Relating to Steam, Electric and Diesel-Electric. 227
Transformer Order Placed, Large. 1676

U

United Engineering Trustees, Inc.
Annual Report Issued. 634
Election Held. 633
New Secretary Elected. 1136

V

Vail, J. G. Chemistry Medal Awarded to. 227

W

Washington Award, Names Requested for. 1026
(White, William Porter) Former Chairman of Pittsfield Section Dies. 1551
Whitehead, Doctor, Explains Proposed Code for Engineering Division of Construction Industry. 1234
Wind Tunnel Completed at Case, Electrically Controlled. 228

X

X-Ray Tubes Are Compared, High Voltage. 227

Division V— Biographical Index

Includes All Personal and Obituary Items.

Adams, Comfort A. *803
Adams, Edward D. *818
Aiyangar, R. Narayana. 1101
Allen, A. E. 504
Allison, Donald Cameron. 1330
Allner, F. A. 368
Anderson, H. L. 1238
Anderson, L. I. 1432
Andrews, H. L. 1230
Angell, E. L. 1239
Anthony, William A. *798
Arnold, Bion J. *795
Atkinson, George Washington. 1686
Atkinson, R. W. 1032

B

Baker, P. W. 1685
Baker, W. R. G. 1137
Baldwin, E. A. 504, 1329
Banta, L. V. 1685
Barclay, R. H. 1032
Barnes, D. C. 636
Barnes, H. H., Jr. 1684
Barre, Herbert Aubrey. 1330
Barton, J. P. 233
Bascome, G. L. 1557
Bassett, J. B. 1330
Batchelder, W. O. 1240
Beall, M. F. 1685
Beckjord, W. C. 1557
Belinge, R. A. 1684
Bell, Alexander Graham. *791
Bender, L. B. 1684
Bergman, S. R. 636
Berresford, Arthur W. *804, 1239
Betts, Philander. 1329
Bewley, L. V. 625
Bickelhaupt, C. O. 368, 1428
Bishop, Nathaniel. 1685
Black, W. A. 1685
Bliss, F. W. 1330
Blondel, André E. *812
Bohnert, A. M. 1330
Brigman, B. M. 1557
Brosemer, B. O. 1330
Brown, Arthur A. 369
Brown, Charles E. L. *812
Brush, Charles F. *815
Bucher, G. H. 1138
Buck, H. W. *802
Budde, Emil A. *813
Bush, Vannevar. 636

C

Cady, W. G. 368
Caldwell, C. W. 1684
Caldwell, O. H. 368
Campbell, Allan B. 1033

Carraway, T. W. 1239
Carty, John J. *801
Cavanagh, Gordon 1685
Charlesworth, H. P. *810
Chawner, W. R. 1033
Chesney, C. C. *807
Chitty, A. M. 1138
Chubb, L. W. 1239
Clark, A. B. 1237
Clark, F. M. 635
Clark, T. C. 636
Clarke, Charles L. *823
Clegg, T. Herbert 234
Clifford, W. R. 233
Coe, R. J. 1137
Condict, George Herbert 1033
Conley, B. L. 1557
Conrad, Frank 232, *818
Cook, J. A. 1556
Coolidge, William D. *818
Cooper, A. B. 1032
Cooper, L. S. 1684
Corney, C. A. 1330
Creedy, Frederick 1684
Crocker, Francis B. *793
Crowdes, G. J. 1329
Cullwick, E. G. 1684
Currie, Harry Allen 1241
Curtis, C. C. 1032, 1429
Curtis, H. L. 1137
Cushing, Harry C., Jr. 1101

D

Dalsell, C. W. 1684
Damon, George Alfred 1330
Damon, J. C. 1329
Darling, J. A. 635
Dates, H. B. 1032
Davidson, W. F. *1556
Davies, J. E. 1685
Davis, C. M. 1239, *1555
Davis, Minor Meek 1138
Dawes, C. L. *1238
Dawson, Arthur W. 1330
Dean, H. C. 1429
Dearborn, R. H. 1137
de Ferranti, S. Z. *813
Delack, B. L. 1556
Dellinger, Floyd Elliott 1241
Dellplain, M. O. 1684
DeWitt, Paul 1101
Dickerson, E. N., Jr. 823
Dickinson, Leonard P. 1241
Diwan, Jetha N. 1101
Dixon, James 1685
Dobson, W. P. 1032
Donaldson, R. D. 1557
Dormer, W. J. S. 1329
Doty, Paul 368, 1684
Downing, P. M. 1556
Doyle, E. J. 636
Driscoll, C. C. 1240
Duncan, Louis *792
Dunn, Gano *799
Dunstan, G. H. 1138
Duvoisin, Edward Marc 1430

E

Eastham, Melville 368
Edgar, Harry Thomas 637
Edgar, R. F. *1238
Edison, Thomas A. *814
Egan, L. H. 504
Eldredge, Mark 636
Emmet, William LeRoy *816
Engle, K. D. 1685
Evans, Gomer Louis 1686

F

Faciolli, Giuseppe 368, *819
Farmer, Frank Malcolm 231, 504, *1038, 1555
Farmer, Moses G. *811
Ferguson, Louis A. *798
Ferguson, William A. 1101
Ferry, J. H. 635
Field, Allan Bertram *819
Field, Cyrus W. *811
Fies, John 1557
Finch, H. I. 1329
Finch, W. G. H. 1557
Findley, James G. 505
Finley, James G. 1101
Fisken, J. B. *1329
Fits, O. R. 1685
Foch, Ferdinand *814
Fondiller, William 1239
Foote, J. H. 1557
Foster, D. E. 1557
Foster, William J. *819
Fowler, G. F. 1330
Fox, E. G. 504
Frederiksen, Victor 1684
Friday, C. D. 1685
Funk, Nevin Elwell 231, 1038

G

Gear, Harry Barnes 232, 1038
Gelin, Lasare 233
Gherardi, Bancroft *807, 1240
Gierisch, Otto Tomas 1138
Gifford, W. S. 1430
Going, L. W. 1032
Goldsmith, A. N. 368
Goldstein, M. K. *1683
Goodwin, Harold, Jr. *1683
Gorsuch, W. S. 1137
Graham, R. W. *1556
Gray, Roy William 1241
Green, D. C. 1685
Green, Norvin *788
Greenland, S. W. 504
Grettum, L. A. 1430
Grissinger, Elwood 1558
Grunfield, Maurice 637
Gulliksen, F. H. *1137

H

Hackett, J. Henry 1101
Hamilton, George A. *816
Hamilton, H. C. 1329
Hammer, William Joseph 636, 847
Hannah, S. W. 1683
Harrell, F. E. 504
Harries, George Herbert 1558
Harris, Grenville A. 1138
Harvey, Dean 1032
Hawkes, C. J. 1324
Hazard, Rowland R. 829
Heath, E. B. 1681
Heaviside, Oliver 815
Heising, R. A. 368
Hellmund, Rudolf E. *819
Henline, H. H. *820
Henrici, Hermann C. 1242
Henyam, G. W. 1033
Hering, Carl *794
Herts, S. S. 1556
Hewlett, Edward Marriott 1240
Hicks, L. R. 1557
Hill, W. S. 1557
Hillebrand, W. A. 1329
Himes, C. F. 1238, 1329
Hinson, N. B. 1556
Hitchcock, H. W. 233
Hobart, H. M. 1428
Hoen, W. M. 1556
Hogan, J. V. L. 368
Holton, J. L. 1239
Hoover, Herbert *815
Horle, L. C. F. 368
Hosmer, Sidney 1429
Hough, H. W. 1033
Houston, Edwin J. *792
Howell, John W. *817
Hughes, R. H. 1137, 1240
Hull, L. M. 368
Humphries, P. H. *1238
Hunt, L. F. 1683
Hunter, T. M. 635
Hussey, Abram 1684
Hutchinson, F. L. *820

I

Idall, Murray J. 1138
Ilsley, L. C. *1556

J

Jackson, Dugald C. *799
Jacobus, D. S. *1032
Jaehnig, Paul H. 1101
James, H. D. 504
James, T. C. 1032
Jansky, C. M., Jr. 368
Jewett, F. B. 635, *805
Johnson, H. A. 232, 1033
Johnson, J. Allen 230, *1038, 1137, 1428
Joho, Ernest Charles 637
Judy, E. W. 1556

K

Kaesemeyer, Charles F. 1101
Kaighn, Herbert Eugene 1034
Kato, Shisuo 1138
Keel, C. H. 1329
Keese, Foster D. 1430
Keith, Nathaniel S. *820
Kellogg, C. W. 368
Kelly, J. T., Jr. 1685
Kelvin, Lord (William Thomson) *812
Kendall, B. W. 1237
Kennelly, A. E. *232, *793
Kent, P. J. 635
Ker, William Wallace 637
Kikutaro, Nogami 1558
King, C. F., Jr. 1685
Kingston, F. S. 1685
Klauber, L. M. 1429
Knight, F. D. *1683
Knowlton, R. H. 1033
Knox, C. C. 1557
Kobak, Edgar 625, 1032
Kobrock, J. B. 1329
Koiner, C. W. 233
Kolster, F. A. 368
Kouwenhoven, W. B. 1032
Kreindler, Mitchell Aaron 1430
Kron, Gabriel 1137
Kroneberg, A. A. *1683

L

Lackie, W. W. 1138
Lamar, R. W. 636
Lamme, Benjamin G. *817
Lamme, William Fenner 234
Lane, H. S. 1329
Langan, T. R. 1329, 1684
Lawler, E. R. 1032
Laxton, Ralph Roberts 1242
Lee, W. S. 683, *809, *1131
Leihy, C. W. 1329
Lieb, John W. *796
Lillibridge, R. D. 1240
Lincoln, J. C. 1555
Lincoln, Paul M. *801
Lines, Marion Brown 1138
Logan, A. E. 1555
Ludwig, L. R. *1237
Lydall, C. H. 1684
Lyden, Daniel R. 1101
Lyman, James 1033
Lyman, O. B. 1557
Lyons, J. M. 1685

M

Mackness, Cyril Francis 505
Maclachlan, Wills 1032
Magnusson, C. E. 1429
Maillard, A. L. 1137
Mailloux, C. O. *800
Marconi, Guglielmo *814
Martin, C. B. 1032
Martin, H. A. 233
Martin, T. Commerford *789
Mathey, Edward Dubois 1241
May, D. T. 1137
Mayo, C. A. 635
McCarthy, J. B. 1033
McCarty, George Martin 1242
McClellan, William 368, *804
McElbeny, George B. 1101
McGraw, J. H. 1430
McKee, E. R. 1684
McKinney, H. R. 1685
McManus, John Hugh 1686
McMeen, Samuel Groenendyke 1330
McMillan, Fred Orville 230, 1038
Mellinger, Edward 1101
Mendenhall, Vestor David 234
Mercier, E. F. H. 1557
Mershon, Ralph D. *800
Mess, C. T. 368
Meyer, E. B. 1239, 1429
Meyer, Frank J. 230, 1038
Milde, E. C. 1684
Miller, Kempster Blanchard 233
Millikan, Robert A. *816
Milne, James 1241
Mitchell, Guy Köehling 1034
Moloney, T. O. 504
Montgomery, L. J. 1684
Montsinger, V. M. 1429
Moody, A. S. 1429
Moon, P. H. 1684
Morecroft, John Harold 504
Morehouse, L. F. 1329
Moreland, E. L. *1683
Morrill, Edward F. 1101
Morris, H. W. 1685
Morrow, L. W. W. 1428
Morse, John 1329
Morse, Everett 369
Morss, H. A. 636
Mortensen, Niels L. 1101
Moulton-Redwood, W. J. *1238
Moultrop, I. E. 1239
Muir, R. C. 1239
Murray, J. M. 1330
Myers, Ord 1101
Myler, P. J. 636

N

Nelson, A. R. 1685
Nelson, E. L. 368
Newton, George Johnson 1035
Nitschke, Charles Wells 505
Noble, P. O. 1330
Nogami, Kikutaro 1558

O

Oehler, A. G. 1033
Oldacre, M. S. 1430
Osgood, Farley *806

P

Pacinotti, Antonio *813
Parkhurst, Charles W. 1686
Partridge, Warren 1686
Patten, I. A. 1684
Perry, O. M. 1032
Peters, Joseph Dufferin 369
Phelps, George M. *821
Phelps, J. E. B. 1033
Pope, Franklin L. *788
Pope, Ralph W. *820
Porras, M. Alfonso 1101
Porter, J. F. 1329
Post, George Gilbert 230, 1038
Potter, William Bancroft 369
Powell, A. L. *1239
Preece, Sir William *811
Price, Charles Wilson 1034
Proutt, Frederick George 1241
Pupin, M. I. *806

Q

Quinn, E. A. 1240

R

Rae, Frank B. 824
Reagan, M. E. *1555
Reid, Thorburn 234
Rhodes, Donald 1329
Rice, Calvin Winsor 1557
Rice, E. W., Jr. *802
Ripple, Paul W. 1242
Robert, Jr., L. W. 635

Rodey, Jr., B. S. 636
Rogers, J. O. 1557
Roper, M. L. 1686
Ross, J. D. 1033
Ross, Norman Nelson 637
Roth, Arnold 368
Royer, J. E. 1429
Rutan, E. J. 1557
Ryan, Harris Joseph *805, 1240, *1327
Ryan, Walter D'Arcy 636
Ryan, W. T. 1429

S

Samuels, M. M. 1329
Scattergood, E. F. 1429
Schamberger, S. O. 1239
Schiller, A. R. 1556
Schleicher, G. B. 1237
Schmid, C. F. 1033
Schneider, W. G. 1557
Schreiber, H. V. 233
Schuchardt, R. F. *808
Schum, Charles H. 1101
Scott, Carl F. 1557
Scott, Charles F. *795
Scott, J. A. 1137
Scott, William Morton 1242
Selden, Paul Bernard 1430
Sessions, Edson Oliver 1033
Shaad, G. C. 1329
Shand, Robert 1101
Sheldon, Samuel *797
Shibusawa, Motoji *815
Shields, C. R. 1685
Shoemaker, G. T. 1329
Shreve, E. O. 1240
Shute, E. R. 368
Siegfried, Victor 504
Simon, Arthur 1684
Skinker, M. F. 1033
Skinner, C. E. *809, 1032
Sleeper, H. P. 1428
Slepian, Joseph *1237
Slichter, Walter Irvine 232, *821
Sloan, M. S. 1032
Smalley, D. D. 1329
Smedburg, M. W. 1685
Smith, Carleton W. 505
Smith, D. L. 1137
Smith, F. W. 1429
Smith, H. A. 1330
Smith, Harold B. *808
Smith, J. C. 504
Smith, L. W. 504
Smith, W. R. 1137, *1682
Spector, M. 504
Spencer, H. H. 1239
Sperry, Elmer A. *818
Sporn, Philip *635
Sprague, Frank Julian *791, 1557, 1685
Spring, E. W. *1137
Squier, George Owen 636, 848
Stacey, J. D. 1684
Stahl, E. C. M. 1684
Stanley, William *817
Stannard, Clare Nowlen 369
Stansel, N. R. *1555
Stauffacher, E. R. 233
Stearns, W. G. 1330
Steinmetz, Charles P. *794
Stephens, C. E. 368
Stevens, John Franklin 234
Stewart, H. R. 1430
Stillwell, L. B. *803, *798
Stott, Henry G. *797
Streuli, W. R. 1684
Strong, J. R. 1685
Susan, Paul 1138
Sutherland, George 1429
Sutton, L. V. 1240
Swasey, Ambrose *815
Swope, Gerard 1429

T

Tait, F. M. 1685
Tapscott, Ralph Henry 231, 1038, 1428
Taylor, T. S. 1429, 1557
Teckoe, J. E. 1032
Tesla, Nikola *817
Thompson, S. P. *813
Thomson, Elihu *790
Thomson, Wm. (Lord Kelvin) *812
Timbie, W. H. 231, 1038
Timoshenko, G. S. 1557
Tolman, C. M. 1685
Townley, Calvert *223, 233, *803
Tullar, C. E. 1239
Turner, H. M. 368, *1555

U

Underwood, C. M. 1684

V

Vassar, H. S. 1033, 1239
von Siemens, E. W. *812

W

Waddell, J. D. 1557
Wagner, T. B. *1237
Walls, J. A. 368
Way, S. B. 504
Weber, F. D. 636, 1032
Weber, H. H. 1032
Welch, A. F. 1330
West, John 504
Westinghouse, George *816
Weston, Edward *789
Wheatlake, B. C. J. 504
Wheeler, Schuyler Skaats *796
White, Bryant 233
Whitehead, J. B. 504, *810, 1032
Willis, C. H. 1237
Wilson, C. E. 1330
Wilson, Charles H. 1558
Wilson, J. M. 1033
Wilson, Richard Little 1430
Wilson, William 368
Winter, W. L. 368
Wolfe, C. M. 1685
Wolfrom, C. A. 504
Wood, L. A. S. 1240
Wood, Walter 1430
Woodruff, W. W. 1685
Wright, E. M. 1330
Wyatt, K. S. *1137

Y

Yamamota, Kiyosho 1684
Yambert, D. W. 1685
Yorke, George Marshall 636

Annual Reference Index

ELECTRICAL ENGINEERING

Volume 53 1934